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Tacoma, WA

Jun 79

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Water resources data for the 1978 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This report in two volumes contains records for water discharge at 248 gaging stations; stage only at 4 gaging stations; stage and contents at 44 lakes and reservoirs; water quality at 117 gaging stations (including 6 lakes and reservoirs) and 215 wells; and water levels at 166 observation wells. Also included are data for 96 crest-stage, and 89 water-quality partial-record stations. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data together with the data in Volume 2 represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Washington.

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Water Resources Data for Washington

Volume 1. Western Washington

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-78-1

WATER YEAR 1978

Prepared in cooperation with the State of
Washington and with other agencies

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA 22161

CALENDAR FOR WATER YEAR 1978

1977

OCTOBER

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March 3, 1849

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Water Resources Data for Washington

Volume 1. Western Washington

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-78-1

WATER YEAR 1978

Prepared in cooperation with the State of
Washington and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For additional information write to
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U. S. Geological Survey
1201 Pacific Avenue Suite 600
Tacoma, Washington 98402
1979

PREFACE

This report was prepared by personnel of the Washington district of the Water Resources Division of the U.S. Geological Survey under the supervision of C. R. Collier, District Chief, and W. H. Robinson, Regional Hydrologist, Western Region. It was done in cooperation with the State of Washington and with other agencies.

This report is one of a series issued annually for each State. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management, U.S. Geological Survey.

Data for the State of Washington are in two volumes as follows:

Volume 1. Western Washington

Volume 2. Eastern Washington

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(Letter after station name designates type of data: (d) discharge (e) elevation, gage height or contents, (c) chemical, (b) biological, (m) microbiological (t) water temperature (s) sediment (p) pesticide)

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WATER RESOURCES DATA FOR WASHINGTON, 1978

INTRODUCTION

Water resources data for the 1978 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 248 gaging stations; stage only at 4 gaging stations; stage and contents at 44 lakes and reservoirs; water quality at 117 gaging stations (including 6 lakes and reservoirs) and 215 wells; and water levels at 166 observation wells. Also included are data for 96 crest-stage and 89 water-quality partial-record stations. Locations of these sites are shown on figures 4, 5, 6, and 22. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data together with the data in Volume 2 represent that part of the national Water Data system operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Washington.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United. States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from the Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report WA-78-1". For archiving and general distribution, the reports for water years, 1971-74 are also identified as water-data reports. These water-data reports are on sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the district chief at the address given on the back of the title page or by telephone (206) 593-6510.

COOPERATION

The U.S. Geological Survey and organizations of the State of Washington have had cooperative agreements for the systematic collection of surface-water and water-quality records since 1909. Organizations that supplied data are acknowledge in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Washington State Department of Ecology, Wilbur G. Hallauer
Washington State Department of Fisheries, Gordon Sandison
Washington State Department of Transportaion, William A. Bulley, secretary
Washington State Department of Game, Ralph W. Larson, director
City of Seattle, Department of Lighting, Gordon Vickery, superintendent
Municipality of Metropolitan Seattle, Neil Peterson, executive director
City of Tacoma, Department of Public Utilities, A. J. Benedetti, director
City of Tacoma, Department of Public Works, Ronald M. Button, director
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Hoh Tribal Council, Esther Penn, chairperson
Pierce County Board of Commissioners, Clay Huntington, chairman
Clallam County Board of Commissioners, Howard V. Doherty Jr, chairman

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 40 gaging stations; the U.S. Environmental Protection Agency, in collecting records for 2 water-quality stations; the U.S. Energy Research and Development Administration, in collecting records for 6 water-quality stations; the Bureau of Reclamation, U.S. Department of Interior, in collecting records for 18 gaging stations; the U.S. Department of State, in collecting records for 13 gaging stations; the Bonneville Power Administration, in collecting records for 4 gaging stations.

The following organizations aided in collecting records:

Crown Zellerbach Corporation; Intercounty River Improvement; ITT Rayonier; Pacific Power and Light Co., No. 1 of Cowlitz County, No. 1 of Douglas County, No. 2 of Grant County, No. 1 of Pend Oreille County, Puget Sound Power and Light Co., Skagit County Engineer; University of Washington, through its Fisheries Research Institute; Washington Public Power Supply System; Washington Water Power Co., Whatcom County Engineer.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report are defined below. See also table for converting English units to International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse of plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of samples.

Fecal streptocaccal bacteria are bacteria found also in intestines of warm-blood animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Cells/volume referes to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonacous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloro-platinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulated the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet or water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/s, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (coloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution area, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part of all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (*ug/g)* is a unit expressing the concentrations of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, *ug/L)* is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L,*mg/L*) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Partial-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.........	0.00024 - 0.004	Sedimentation
Silt.........	.004 - .062	Sedimentation
Sand.........	.062 - 2.	Sedimentation or sieve
Gravel.......	2.0 -64.0	Sieve

The particle-size distribution given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillienth (1×10^{12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10}) radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those higher green plants. Some forms produce algal mats or floating "moss in lakes." Their concentrations are expressed as number of cells/mL of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifiers.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water, it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cuase of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the work "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of aftificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplace samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the area are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 µm membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 µm membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdam and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata* is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	*Hexageria*
Species	*Hexagenia limbata*

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

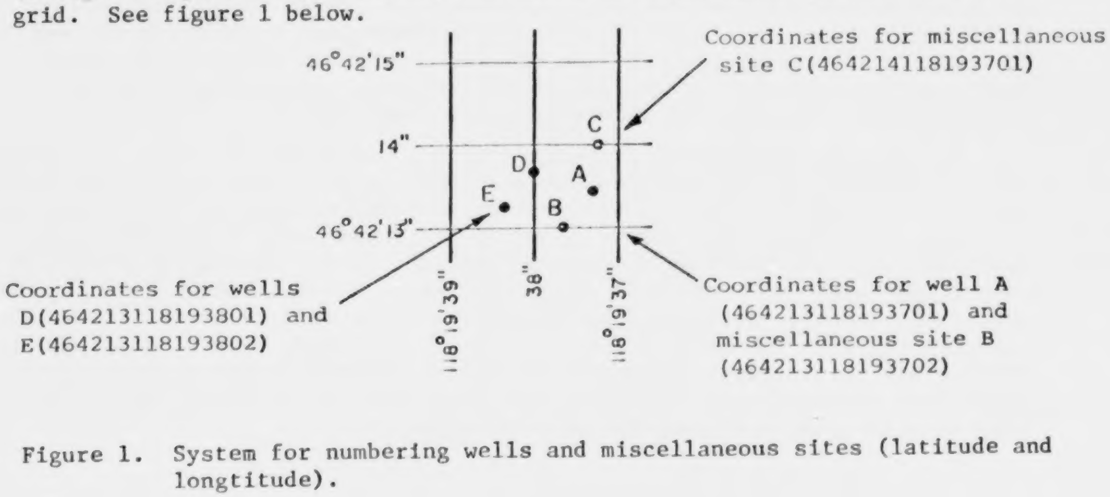
Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station such as 12041000, which appears just to the left of the station name, includes the 2-digit part number "12" plus the 6-digit downstream order number "041000."

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 below.



Coordinates for miscellaneous site C(464214118193701)

Coordinates for wells D(464213118193801) and E(464213118193802)

Coordinates for well A (464213118193701) and miscellaneous site B (464213118193702)

Figure 1. System for numbering wells and miscellaneous sites (latitude and longtitude).

Local identifier well-numbering system

Local identifier well numbers used by the Geological Survey in the State of Washington are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceeding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. (Because all townships in Washington are north of the Willamette base line the letter "N", indicating north is omitted; and because most of the State is east of the Willamette meridian the letter "E" is sometimes omitted for those ranges east of the Willamette meridian, but "W" is always included when the range lies west of the Willamette meridian.) The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in the NW¼SW¼ sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2. See figure 2 below:

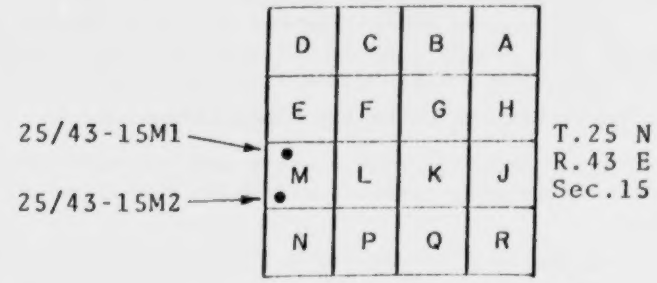


Figure 2. Local identifier well numbering system.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict area variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and asses long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are samples represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), stepbackwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lake and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations or revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS" on page 7.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE", it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR: if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of field data and computed results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight intake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

All temperature values in the daily tables are rounded to the nearest 0.5°C. Therefore, temperature values published in conjunction with water samples may be 0.1 to 0.2°C outside the range of the values published in the daily tables.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During period of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow is predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observations wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

HYDROLOGIC CONDITIONS

The annual mean yearly runoff in western Washington during the 1978 water ranged generally from about 90 to 110 percent of average with few streams indicating less than average flow.

Streamflow at lower elevations was below average in October, above average in November, excessive in December, below average January through April, then generally remained above average for the remainder of the water year.

Streamflow at higher elevations was below average in October, excessive in November and December, below average January and February, and above average in March following precipitation trends that also affected streamflow at the lower elevations. The snow pack by April 1 was below normal and streamflow April through July was less than average. Increased precipitation in August and September caused streamflow to climb to above normal. Monthly and annual mean discharges are compared with medians at two representative gaging stations in figure 3.

Excessive precipitation at all elevations during the first few days of December caused exceptionally high runoff of streams tributary to the Cascade range between Tacoma and the Columbia River. Flooding occurred in the Puyallup, Newaukum, Cowlitz, Lewis and Washougal River basins. Instantaneous peaks of record were recorded at streams principally in Cowlitz, eastern Chehalis, Lewis, and Washougal River basins.

The groundwater level in the key observation well in western Washington was below average all year with the July and August readings being new monthly minimums for 39 years of record.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office Prices are effective October 1978 but are subject to change.

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. *Water temperature-influential factors, field measurement, and data presentation*, by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages. $1.60

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W.Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages. $0.85

2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. $1.90.

2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. $1.75.

3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. $1.00.

3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. $0.35.

3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. $0.40.

3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. $1.00.

3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. $0.35.

3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6, 1968, 13 pages. $1.00.

3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. $1.40.

3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. $1.25.

3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. $1.20.

3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. $0.35. Not currently available.

3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. $0.70.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2 1976. 172 pages. $2.50.

3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. $2.50.

3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages. $2.50.

3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. $2.10.

4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. $1.60.

4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. $1.20

4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. $0.65.

4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. $0.75.

4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. $0.65.

4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. $1.10.

5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases*, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. $2.40.

5-A2. *Determination of minor elments in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. $0.80.

5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. $0.90.

5-A4.* *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin. B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages. $20.00.

5-A5.* *Methods for determination of radioactive substances in water and fluvial sediments*, by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages. $16.00.

5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. $2.10.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages. $2.30.

8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. $0.70.

8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. $1.10.

*These publications are available ONLY from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. They are in looseleaf format and are subscription items. Additional supplements will be issued to subscribers at no extra cost. Checks should be made payable to Superintendent of Documents. Requester should emphasize to Superintendent of Documents that this is a subscription item.

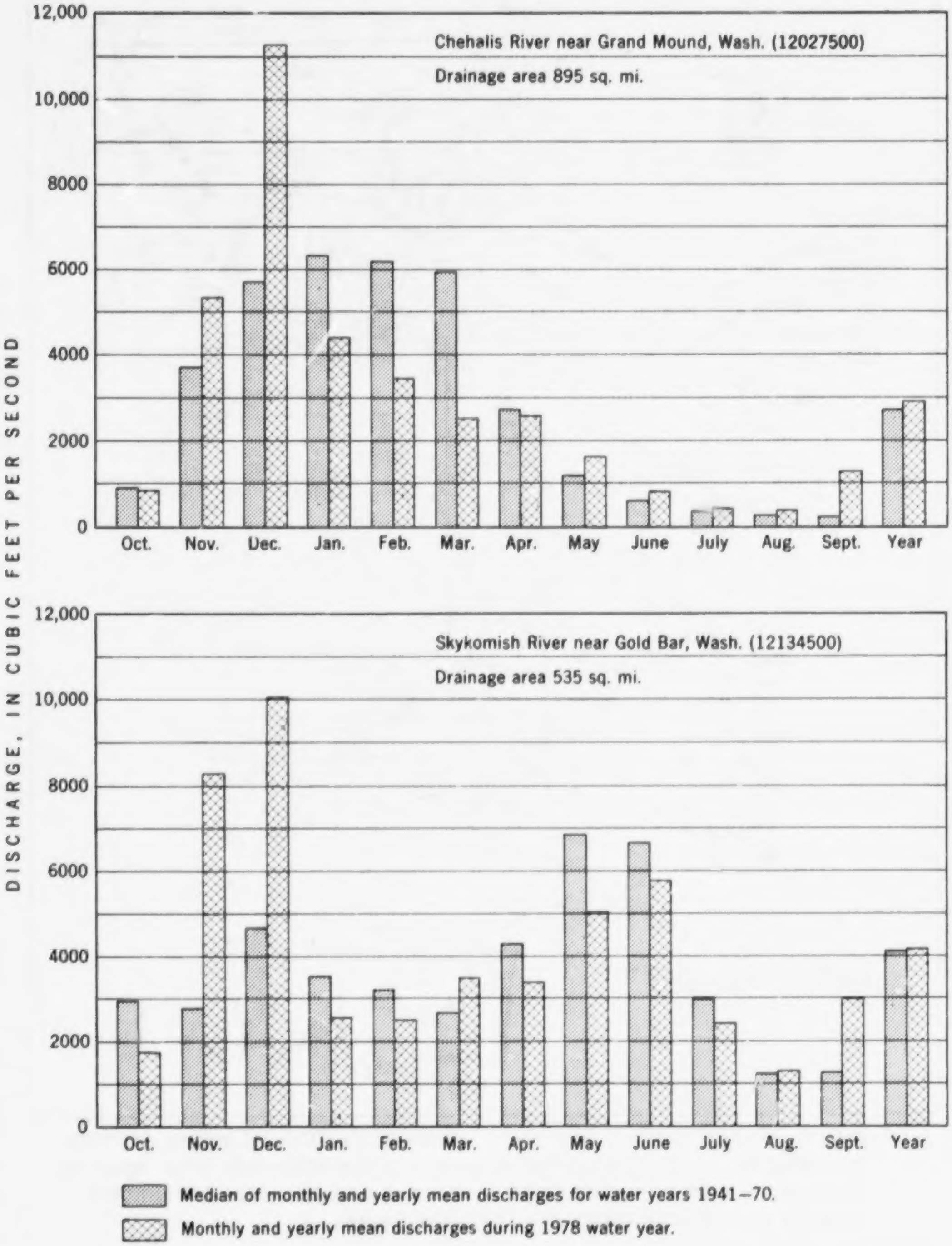


Figure 3. Discharge during 1978 water year compared with median discharge for period 1941–70 for two representative gaging stations.

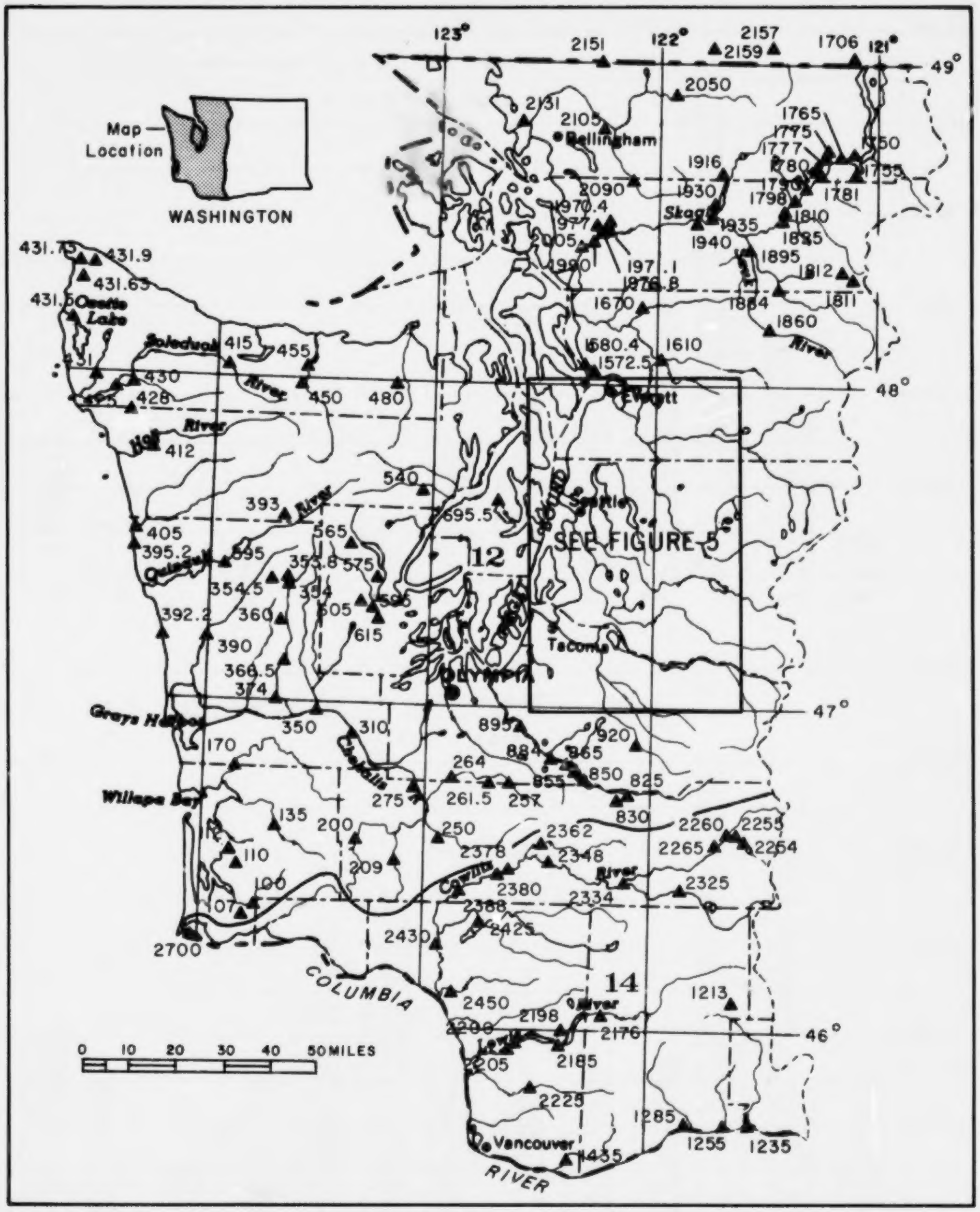

Map Location
WASHINGTON
123°
122°
121°
49°
48°
47°
46°
Bellingham
Skagit
Everett
Seattle
Tacoma
Olympia
Vancouver
SEE FIGURE 5
12
14
Grays Harbor
Willapa Bay
COLUMBIA RIVER
Cowlitz River
Soleduck River
Hoh River
Quinault
Ozette Lake
0 10 20 30 40 50 MILES

Figure 4. Map of Western Washington showing locations of gaging stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.

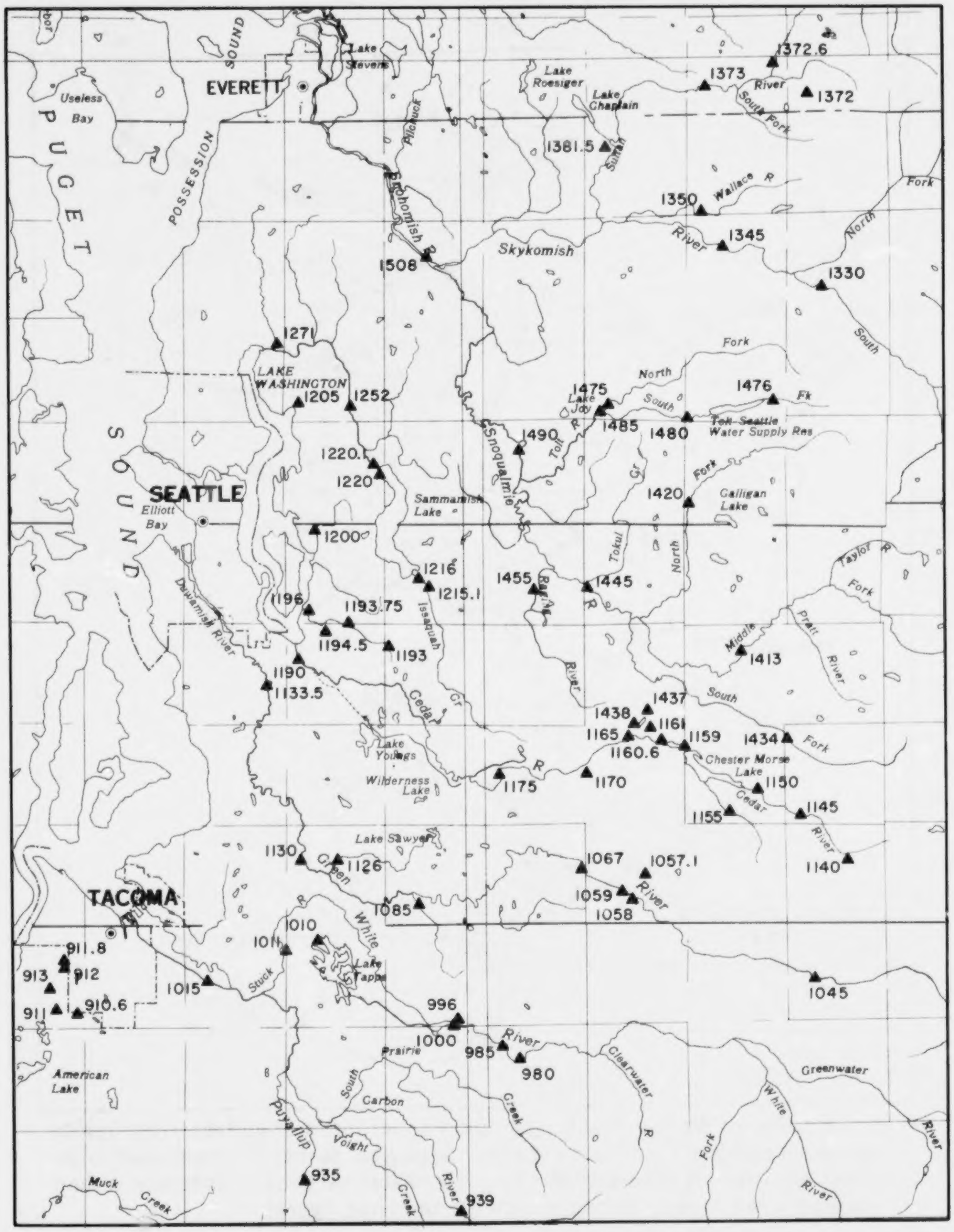

Lake Stevens
EVERETT
Useless Bay
POSSESSION SOUND
PUGET
SOUND
Lake Roesiger
Lake Chaplain
1372.6
1373
River
1372
South Fork
1381.5
Sultan
Pilchuck
Snohomish R
1350
Wallace R
Fork
North
1345
River
Skykomish
1508
1330
South
1271
LAKE WASHINGTON
1205
1252
Fork
North
1475
Lake Joy
South
1485
1476
Fk
1480
Tolt Seattle Water Supply Res
1490
Tolt R
Snoqualmie
1220.1
1220
SEATTLE
Elliott Bay
Sammamish Lake
1420
Fork
Calligan Lake
North
Tokul Cr
1200
1216
1215.1
1455
Raging R
1445
Taylor R
Fork
Issaquah
1196
1193.75
1194.5
1193
Duwamish River
Middle
Pratt River
1413
1190
1133.5
Cedar Cr
River
South
1437
1438
1161
1165
1159
1434
Fork
1160.6
Chester Morse Lake
Lake Youngs
Wilderness Lake
1175
R
1170
1150
1155
Cedar
1145
River
Lake Sawyer
1130
Green R
1126
1067
1057.1
1140
TACOMA
1059
1058
River
1085
1010
1011
White
Lake Tapps
911.8
913
912
911
910.6
1015
Stuck R
1045
996
1000
985
River
980
Prairie
American Lake
Clearwater R
Greenwater
South
Carbon
Creek
Puyallup
Voight
Fork
White
River
River
935
Creek
River
939
Muck Creek

Figure 5. Map showing locations of gaging stations in the insert of Figure 4.

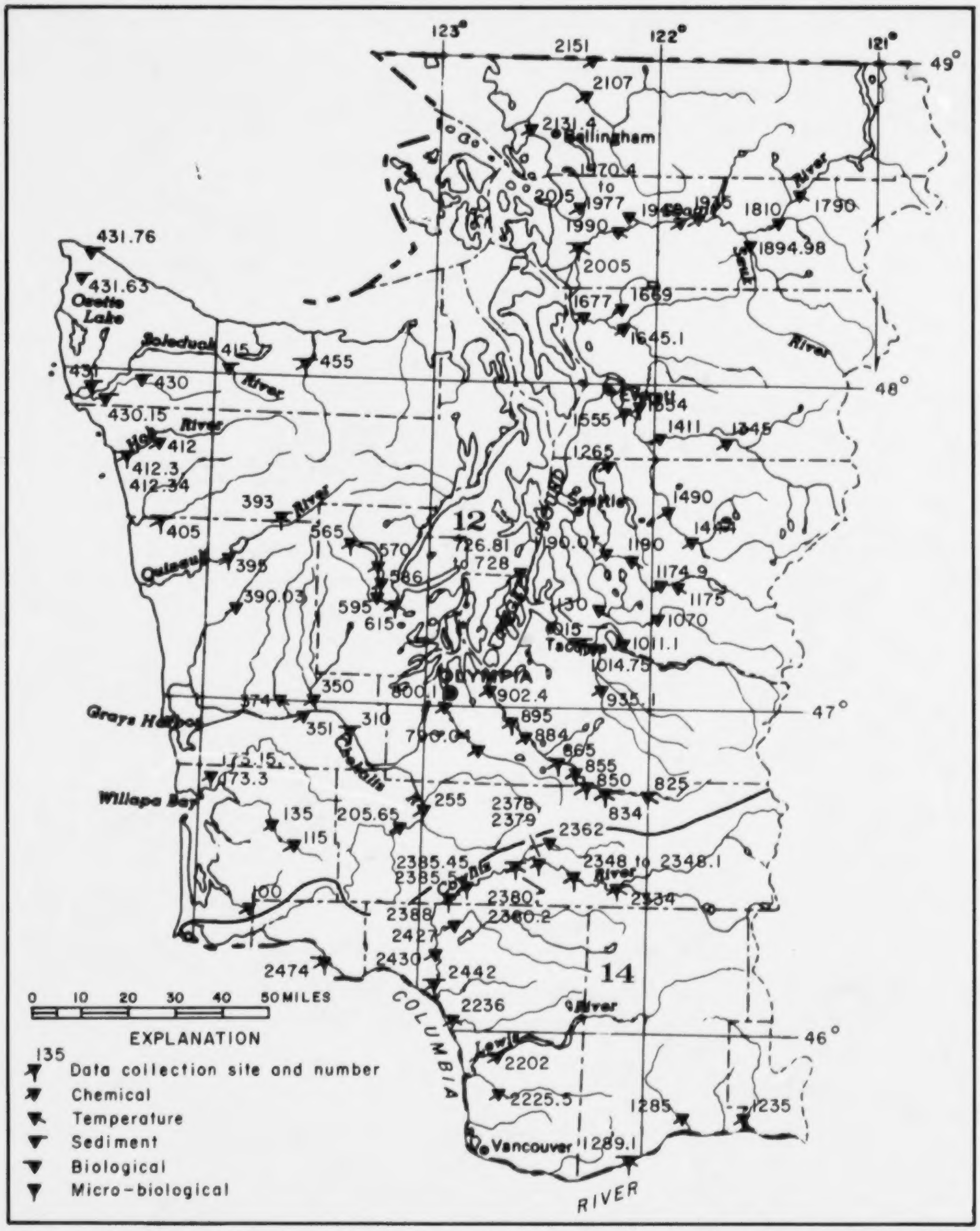

123°
122°
121°
49°
48°
47°
46°
2151
2107
2131.4
Bellingham
1970.4 to 1977
2015
1990
1955
1935
1810
1790
River
1894.98
2005
1677
1669
1645.1
River
431.76
431.63
Ozette Lake
Soleduck
415
River
455
431
430
430.15
River
412
412.3
412.34
1555
1654
1411
1345
1265
1490
1440
393
River
405
Quinault
395
390.03
565
570
586
595
615
12
726.81 to 728
190.07
1190
1174.9
1175
1070
1011.1
1130
1015
Seattle
Tacoma
1014.75
350
374
Grays Harbor
351
310
800.1
OLYMPIA
902.4
935.1
895
884
790.01
865
855
850
825
834
173.15
173.3
Willapa Bay
135
115
205.65
255
2378
2379
2362
2385.45
2385.5
2348 to 2348.1
River
2334
100
2380
2380.2
2388
2427
2430
2474
2442
14
River
2236
COLUMBIA
Lewis
2202
2225.5
1285
1235
Vancouver
1289.1
RIVER
0 10 20 30 40 50 MILES
EXPLANATION
135
Data collection site and number
Chemical
Temperature
Sediment
Biological
Micro-biological

Figure 6. Map of Western Washington showing locations of surface-water-quality sampling stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW¼SW¼ sec.1, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 0.1 mi (0.2 km) upstream from county highway bridge, 2.2 mi (3.5 km) upstream from Salmon Creek, 3.4 mi (5.5 km) east of Naselle and at mile 17.4 (28.0 km).

DRAINAGE AREA.--54.8 mi^2 (141.9 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1929 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

GAGE.--Water-stage recorder. Altitude of gage is 24 ft (7.3 m), by barometer. Prior to Jan. 11, 1957, nonrecording gage and crest-stage gage at site 1,350 ft (411 m) downstream at present datum. Jan. 11, 1957, to Dec. 31, 1961, nonrecording gage and crest-stage gage at site 1,200 ft (366 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years, 433 ft^3/s (12.26 m^3/s) 107.30 in/yr (2,725 mm/yr), 313,700 acre-ft/yr (387 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft^3/s (314 $^3/s$) Jan. 22, 1935, from flood marks at site then in use, from rating curve extended above 4,000 ft^3/s (113 m^3/s) on basis of slope-area measurement at gage height 15.2 ft (4.63 m); maximum gage height, 16.20 ft (4.938 m) Dec. 2, 1977; minimum, 18 ft^3/s (0.51 m^3/s) Aug. 30, 31, Sept. 1, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 4,000 ft^3/s (113 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	1300	*8,720	247	*16.20	4.938	Dec. 13	1600	4,190	119	11.27	3.435
Dec. 10	2300	5,090	144	12.49	3.807						

Minimum discharge, 37 ft^3/s (1.05 m^3/s) Aug. 8-10, gage height, 3.75 ft (1.143 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	1570	1380	207	454	204	322	240	202	91	45	213
2	129	1900	6300	196	733	193	353	228	185	87	44	430
3	120	1020	3190	292	685	190	397	216	172	86	43	282
4	113	704	1610	599	589	193	386	210	163	84	42	299
5	107	549	1080	709	519	177	477	193	150	81	42	265
6	109	494	1330	709	574	169	454	177	139	76	41	219
7	122	635	1280	633	898	353	404	163	134	74	40	193
8	103	500	1020	783	985	438	364	152	127	74	38	216
9	103	537	820	788	898	332	325	144	166	74	37	532
10	93	1760	2060	664	738	292	299	169	142	78	39	840
11	89	1250	3540	556	618	272	272	231	213	78	43	724
12	86	926	2400	489	519	256	249	207	174	71	57	537
13	95	998	3910	537	446	272	246	457	222	66	48	485
14	83	2560	3140	628	408	259	225	871	256	63	42	415
15	78	1920	2570	579	386	240	222	753	231	63	82	364
16	76	1280	2290	546	346	225	231	560	210	79	68	319
17	72	909	1410	519	325	210	319	446	190	70	53	302
18	70	698	1000	523	302	199	332	375	174	65	48	265
19	68	559	778	528	285	188	329	333	161	61	58	237
20	66	471	628	502	265	177	339	298	147	57	53	225
21	66	407	528	804	246	169	419	264	139	55	50	225
22	65	364	457	793	234	161	743	249	139	53	53	537
23	148	374	404	674	222	202	674	228	129	50	61	1700
24	203	472	367	565	219	382	528	222	122	50	288	1090
25	281	1640	332	485	262	1710	454	213	118	49	237	719
26	293	1740	302	434	237	1030	400	240	113	53	172	541
27	218	1300	275	378	222	719	357	329	105	63	120	446
28	223	1200	262	343	213	570	325	332	99	55	95	382
29	494	1640	265	312	---	465	288	275	95	49	81	339
30	820	1170	240	285	---	400	262	243	97	47	73	319
31	559	---	222	295	---	353	---	219	---	46	76	---
TOTAL	5294	31547	45390	16355	12828	11000	10995	9237	4714	2048	2269	13660
MEAN	171	1052	1464	528	458	355	367	298	157	66.1	73.2	455
MAX	820	2560	6300	804	985	1710	743	871	256	91	288	1700
MIN	65	364	222	196	213	161	222	144	95	46	37	193
CFSM	3.12	19.2	26.7	9.64	8.36	6.48	6.70	5.44	2.87	1.21	1.34	8.30
IN.	3.59	21.41	30.81	11.10	8.71	7.47	7.46	6.27	3.20	1.39	1.54	9.27
AC-FT	10500	62570	90030	32440	25440	21820	21810	18320	9350	4060	4500	27090

CAL YR 1977 TOTAL 151244 MEAN 414 MAX 6300 MIN 28 CFSM 7.56 IN 102.67 AC-FT 300000
WTR YR 1978 TOTAL 165337 MEAN 453 MAX 6300 MIN 37 CFSM 8.27 IN 112.23 AC-FT 327900

12010000 NASELLE RIVER NEAR NASELLE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 1,350 ft (411 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1963-73, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1963 to September 1973.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
NOV , 1977							
17...	1535	865	57	7.2	8.4	0	5
JAN , 1978							
24...	1030	570	46	7.6	6.7	5	2
MAR							
24...	1400	322	46	7.8	9.5	5	2
MAY							
17...	1200	450	47	7.2	9.8	5	--
JUL							
24...	1130	50	61	7.7	17.7	5	0
SEP							
26...	1315	530	50	7.0	11.6	5	1

DATE	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1977							
17...	12.0	41	.51	.03	.03	.07	.21
JAN , 1978							
24...	12.5	15	.55	.02	.02	.01	.03
MAR							
24...	11.7	130	.38	.07	.02	.00	.00
MAY							
17...	11.6	18	.55	.03	.01	.00	.00
JUL							
24...	9.6	66	.18	.06	.02	.01	.03
SEP							
26...	10.7	130	.73	.03	.01	.00	.00

12011500 WILLAPA RIVER AT LEBAM, WA

LOCATION.--Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, Hydrologic Unit 17100106, at former gaging station on left bank 0.1 mi (0.2 km) downstream from bridge on State Highway 6, 0.5 mi (0.8 km) west of Lebam, 1.0 mi (1.6 km) upstream from Walker Creek, and at mile 33.9 (54.6 km).

DRAINAGE AREA.--41.4 mi^2 (107.2 km^2).

PERIOD OF RECORD.--Water years 1952-71, October 1977 to September 1978.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES March 1952 to September 1971.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
04...	1145	41	78	6.7	9.5	45	2
NOV							
14...	1130	1470	63	6.2	9.4	85	40
DEC							
05...	1110	431	65	6.4	7.4	30	13
JAN , 1978							
03...	1120	117	65	7.0	5.3	20	4
FEB							
14...	1135	195	68	7.7	6.9	15	2
MAR							
13...	1105	150	63	7.1	7.2	20	3
APR							
17...	1205	136	64	7.0	8.2	25	3
MAY							
08...	1145	68	68	7.4	11.7	20	2
JUN							
12...	1150	44	68	7.2	13.1	--	1
JUL							
24...	1140	11	68	7.2	17.8	40	2
AUG							
14...	1145	10	71	7.3	15.0	35	2
SEP							
05...	1130	41	66	7.1	13.9	40	5

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.4	.43	.03	.02	.01	.03
NOV						
14...	10.9	1.9	.07	.17	.01	.03
DEC						
05...	11.9	1.4	.06	.05	.01	.03
JAN , 1978						
03...	12.7	.87	.07	.03	.01	.03
FEB						
14...	12.3	1.1	.04	.02	.00	.00
MAR						
13...	12.5	1.0	.09	.02	.00	.00
APR						
17...	11.9	.70	.04	.02	.01	.03
MAY						
08...	12.0	.13	.06	.02	.00	.00
JUN						
12...	10.4	.39	.05	.03	.01	.03
JUL						
24...	8.1	.33	.10	.04	.02	.06
AUG						
14...	9.4	.26	.15	.04	.02	.06
SEP						
05...	10.2	.22	.07	.03	.01	.03

12013500 WILLAPA RIVER NEAR WILLAPA, WA

LOCATION.--Lat 46°39'04", long 123°39'05", in SW¼SW¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft (655 m) downstream from Mill Creek, 1.8 mi (2.9 km) southeast of Willapa, and at mile 17.8 (28.6 km).

DRAINAGE AREA.--130 mi² (337 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1947, July 1948 to December 1954, water years 1955-56, 1958-59 (annual maximum), April 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.57 ft (1.088 m) National Geodetic Vertical Datum of 1929. Aug. 26 to Oct. 16, 1947, water-stage recorder at site 2,060 ft (628 m) upstream at different datum. July 28, 1948 to Dec. 2, 1954, water-stage recorder, water years 1955-56, 1958-59, nonrecording gage and Apr.1, 1961 to Apr. 14, 1974, water-stage recorder at site 2,000 ft (610 m) upstream at datum 2.12 ft (0.646 m) higher.

REMARKS.--Water-discharge records good. Some diversion for domestic use and irrigation above station. No regulation.

AVERAGE DISCHARGE.--23 years (water years 1949-1954, 1962-1978), 658 ft³/s (18.63 m³/s), 68.74 in/yr (1,746 mm/yr), 476,700 acre-ft/yr (588 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s (323 m³/s) Feb. 22, 1949, Dec. 13, 1966, from rating curve extended above 7,300 ft³/s (207 m³/s); maximum gage height, 24.22 ft (7.382 m) Feb. 22, 1949, site and datum then in use; minimum discharge, 13 ft³/s (0.37 m³/s) Aug. 20, 1967, minimum gage height, 2.87 ft (0.875 m) Aug. 18-21, 23-25, 31, Sept. 1, 1970, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³.s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 14	1300	5,160	146	14.67	4.471	Dec. 11	0300	8,310	235	18.69	5.697
Dec. 2	1600	*10,700	303	*21.62	6.590	Dec. 13	2000	6,320	179	16.20	4.938

Minimum discharge, 32 ft³/s (0.91 m³/s) Aug. 9-11, gage height, 3.25 ft (0.991 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	2150	1790	332	590	341	522	372	251	99	46	96
2	164	3110	8300	315	1200	322	505	343	233	95	46	302
3	154	1590	5100	372	1100	320	588	320	217	94	46	209
4	143	1090	2420	750	942	332	586	320	201	94	44	207
5	136	890	1660	922	820	302	707	297	188	92	41	203
6	135	715	2030	960	946	285	706	267	173	87	41	164
7	164	834	2000	844	1300	627	621	249	164	82	40	138
8	141	674	1620	1000	1740	848	559	233	161	82	36	136
9	133	650	1300	1000	1620	657	503	221	201	82	33	320
10	123	1630	2640	872	1310	572	457	215	197	81	32	605
11	117	1320	6550	778	1080	520	420	345	221	82	36	540
12	111	1180	4330	698	902	466	377	302	213	81	48	400
13	111	1430	5860	745	773	484	375	536	225	74	57	350
14	109	3750	5290	980	671	452	349	1120	267	70	49	310
15	103	3030	4250	927	641	404	338	1100	231	67	56	280
16	99	2030	3920	877	574	371	356	850	209	76	70	250
17	96	1480	2450	796	526	348	420	700	191	85	57	230
18	94	1150	1750	754	481	325	529	600	175	77	50	200
19	92	922	1360	757	447	305	62[illegible]	520	166	70	47	181
20	89	778	1080	672	414	285	794	460	155	63	50	172
21	88	659	914	956	383	270	814	410	146	60	50	170
22	87	587	796	1050	359	255	1170	390	146	55	65	410
23	172	560	687	924	341	312	1160	370	146	52	60	1760
24	251	715	614	811	329	549	932	350	141	49	191	1080
25	476	2070	560	718	411	2570	783	318	130	49	221	690
26	557	2910	509	647	424	1910	653	325	123	51	154	527
27	377	1970	464	572	381	1270	580	383	115	73	106	431
28	335	1670	437	520	361	989	513	416	109	65	87	365
29	653	2090	434	475	---	804	452	342	102	56	75	322
30	1410	1630	395	430	---	672	409	305	101	50	67	295
31	1060	---	362	438	---	584	---	275	---	46	65	---
TOTAL	7959	45264	71872	22892	21066	18751	17800	13254	5298	2239	2066	11343
MEAN	257	1509	2318	738	752	605	593	428	177	72.2	66.6	378
MAX	1410	3750	8300	1050	1740	2570	1170	1120	267	99	221	1760
MIN	87	560	362	315	329	255	338	215	101	46	32	96
CFSM	1.98	11.6	17.8	5.68	5.79	4.65	4.56	3.29	1.36	.56	.51	2.91
IN.	2.28	12.95	20.57	6.55	6.03	5.37	5.09	3.79	1.52	.64	.59	3.25
AC-FT	15790	89780	142600	45410	41780	37190	35310	26290	10510	4440	4100	22500

CAL YR 1977 TOTAL 219492 MEAN 601 MAX 8300 MIN 24 CFSM 4.62 IN 62.81 AC-FT 435400
WTR YR 1978 TOTAL 239804 MEAN 657 MAX 8300 MIN 32 CFSM 5.05 IN 68.62 AC-FT 475700

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At Bullard Bridge, 0.5 mi (0.8 km) downstream from gaging station and Mill Creek.

PERIOD OF RECORD.--Water years 1966-1973, 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1105	143	78	6.7	9.8	40	2
NOV							
14...	1100	4810	56	5.8	9.6	--	75
DEC							
05...	1045	1670	65	6.4	7.5	30	13
JAN , 1978							
03...	1045	332	69	7.0	4.6	20	4
FEB							
14...	1100	659	64	7.6	6.8	20	3
MAR							
13...	1035	500	65	7.2	7.8	20	3
APR							
17...	1130	380	65	7.0	8.4	25	4
MAY							
08...	1110	231	77	7.4	12.8	15	2
JUN							
12...	1115	207	66	7.3	14.7	--	1
JUL							
24...	1110	49	74	7.2	19.5	35	2
AUG							
14...	1115	48	77	7.3	17.2	35	2
SEP							
05...	1100	207	66	7.2	14.3	40	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.4	.38	.03	.02	.00	.00
NOV						
14...	11.1	1.2	.11	.41	.00	.00
DEC						
05...	12.0	1.2	.05	.06	.00	.00
JAN , 1978						
03...	13.0	.77	.06	.02	.01	.03
FEB						
14...	12.3	.94	.03	.02	.00	.00
MAR						
13...	12.3	.84	.10	.02	.00	.00
APR						
17...	11.8	.59	.04	.02	.00	.00
MAY						
08...	11.7	.52	.09	.01	.00	.00
JUN						
12...	10.3	.30	.03	.02	.01	.03
JUL						
24...	7.8	.21	.08	.02	.01	.03
AUG						
14...	8.6	.16	.08	.03	.01	.03
SEP						
05...	10.3	.23	.07	.04	.01	.03

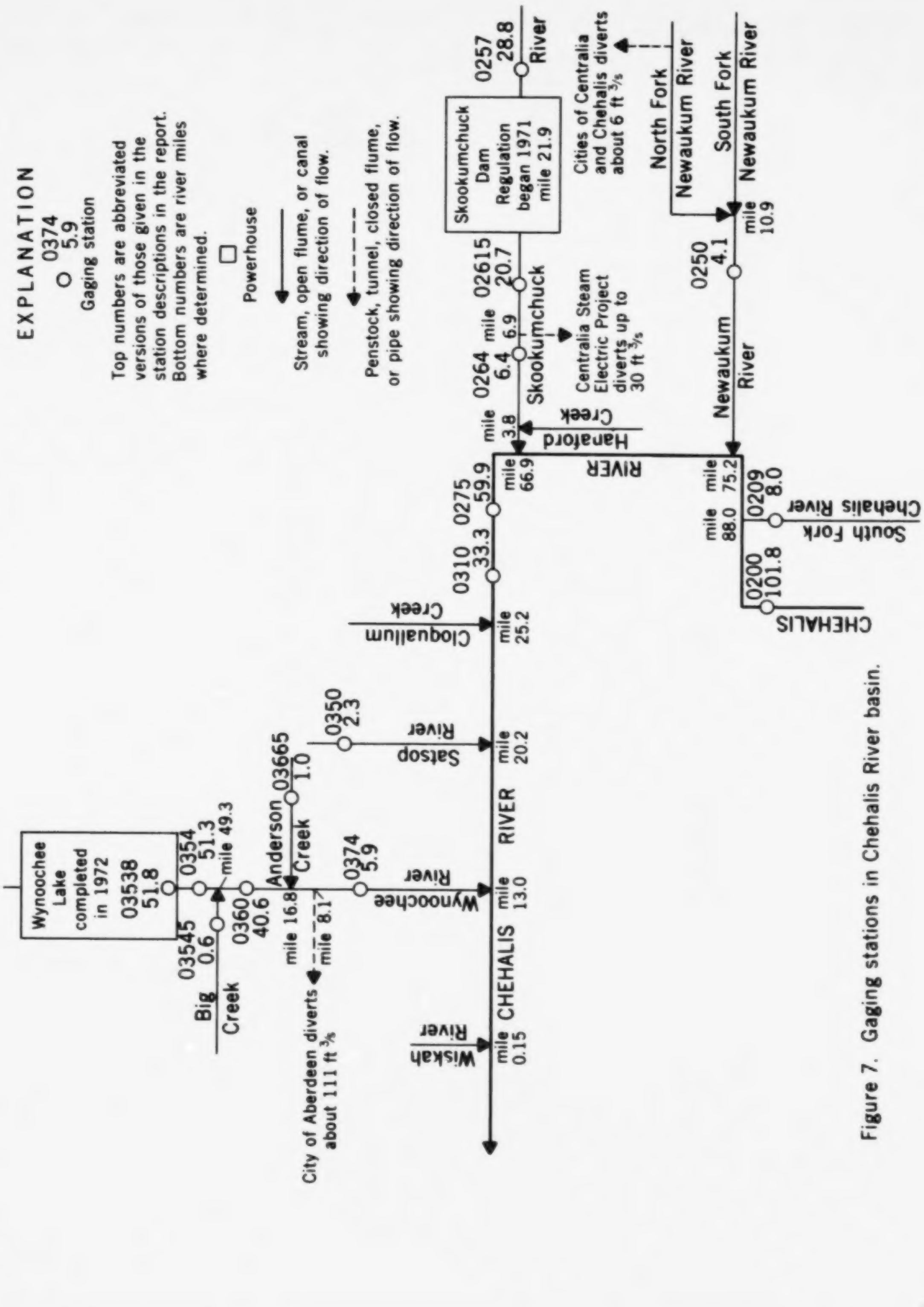

EXPLANATION
0374
5.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Skookumchuck Dam Regulation began 1971 mile 21.9
0257 28.8 River
Cities of Centralia and Chehalis diverts about 6 ft³/s
North Fork Newaukum River
South Fork Newaukum River
mile 10.9
0250 4.1
Newaukum River
02615 20.7
Skookumchuck
mile 6.9
0264 6.4
Centralia Steam Electric Project diverts up to 30 ft³/s
mile 3.8
Hanaford Creek
RIVER
mile 66.9
mile 75.2
0275 59.9
0310 33.3
mile 88.0
0209 8.0
South Fork Chehalis River
0200 101.8
CHEHALIS
Cloquallum Creek
mile 25.2
0350 2.3
Satsop River
mile 20.2
03665 1.0
Anderson Creek
Wynoochee Lake completed in 1972
03538 51.8
0354 51.3
mile 49.3
03545 0.6
Big Creek
0360 40.6
mile 16.8
mile 8.1
0374 5.9
Wynoochee River
mile 13.0
CHEHALIS RIVER
City of Aberdeen diverts about 111 ft³/s
Wiskah River
mile 0.15

Figure 7. Gaging stations in Chehalis River basin.

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE¼NW¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi (2.1 km) south of Doty, 1.6 mi (2.6 km) upstream from Elk Creek, 3.4 mi (5.5 km) north of Pe Ell, and at mile 101.8 (163.8 km).

DRAINAGE AREA.--113 mi^2 (293 km^2).

PERIOD OF RECORD.--October 1939 to current year. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

REVISED RECORDS.--WSP 1316: 1943(M). WSP 1446: 1946(M). WRD Wash. 1972: 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 302.1 ft (92.08 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 100 ft (30 m) downstream at same datum.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--39 years, 580 ft^3/s (16.43 m^3/s), 69.70 in/yr (1,770 mm/yr), 420,200 acre-ft/yr (518 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft^3/s (646 m^3/s) Jan. 20, 1972, gage height, 18.36 ft (5.596 m) from rating curve extended above 7,400 ft^3/s (210 m^3/s) on basis of slope-area measurement of peak flow; minimum, 18 ft^3/s (0.51 m^3/s) Oct. 14, 1952, Aug. 25-28, 1958, Sept. 4, 5, 1972; minimum gage height, 0.69 ft (0.210 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,800 ft^3/s (193 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	1400	*8,130	230	*10.80	3.292	Dec. 10	2400	7,080	201	9.94	3.030

Minimum discharge, 31 ft^3/s (0.88 m^3/s), Aug. 10, gage height, 0.78 ft (0.238 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	2460	1460	287	615	371	404	327	233	85	42	90
2	181	2910	5960	271	1350	339	387	299	215	81	42	225
3	168	1350	3470	363	1270	331	489	283	201	78	40	197
4	155	881	1930	910	1010	331	494	291	187	78	39	281
5	144	663	1320	1190	830	299	725	264	173	76	38	265
6	140	528	2080	1250	850	283	760	243	164	72	36	194
7	159	535	2080	1010	946	605	620	229	155	67	35	152
8	140	442	1450	1210	1170	775	512	215	149	65	33	150
9	133	433	1110	1270	1140	595	435	205	180	65	33	476
10	124	1150	2480	1090	970	494	383	205	180	67	31	924
11	117	961	4690	910	820	440	351	307	184	70	35	610
12	111	858	3360	785	715	383	315	319	167	65	43	414
13	112	1130	5430	805	615	383	303	705	164	61	50	377
14	106	3060	5030	1040	560	359	283	1040	167	60	41	346
15	102	2430	3900	964	535	327	268	1080	161	59	50	288
16	98	1610	3370	830	485	303	271	780	152	75	61	247
17	94	1130	2160	730	453	283	311	600	143	71	50	228
18	92	857	1510	680	426	264	462	485	134	64	44	209
19	87	684	1160	695	404	250	645	404	125	59	45	182
20	84	563	920	635	375	236	705	351	119	55	46	169
21	81	479	770	976	351	226	705	315	113	51	51	167
22	81	425	655	1180	327	215	1050	299	113	48	51	257
23	150	429	565	964	307	258	1110	283	110	46	50	1110
24	236	571	494	790	299	525	855	279	105	45	222	736
25	382	2620	444	670	458	2470	675	268	100	44	157	486
26	342	2900	399	585	485	1700	565	271	100	55	115	370
27	267	1840	367	503	449	1060	494	339	92	71	86	305
28	251	1480	347	458	413	805	431	367	87	57	71	265
29	579	1780	367	408	---	640	383	319	85	49	62	236
30	1480	1310	331	371	---	530	355	283	87	45	57	219
31	935	---	311	371	---	453	---	254	---	43	56	---
TOTAL	7329	38469	59920	24201	18628	16533	15746	11909	4345	1927	1812	10175
MEAN	236	1282	1933	781	665	533	525	384	145	62.2	58.5	339
MAX	1480	3060	5960	1270	1350	2470	1110	1080	233	85	222	1110
MIN	81	425	311	271	299	215	268	205	85	43	31	90
CFSM	2.09	11.3	17.1	6.91	5.89	4.72	4.65	3.40	1.28	.55	.52	3.00
IN.	2.41	12.66	19.73	7.97	6.13	5.44	5.18	3.92	1.43	.63	.60	3.35
AC-FT	14540	76300	118900	48000	36950	32790	31230	23620	8620	3820	3590	20180

CAL YR 1977 TOTAL 187115 MEAN 513 MAX 5960 MIN 27 CFSM 4.54 IN 61.60 AC-FT 371100
WTR YR 1978 TOTAL 210994 MEAN 578 MAX 5960 MIN 31 CFSM 5.12 IN 69.46 AC-FT 418500

12020565 CHEHALIS RIVER AT DRYAD, WA

LOCATION.--Lat 46°37'54", long 123°14'51", in NW¼NE¼ sec.12, T.13 R.5 W., Lewis County, Hydrologic Unit 17100103, at new county road bridge 0.25 mi (0.4 km) south of Dryad and 1.0 mi (1.6 km) downstream from Dunn Creek.

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Water-discharge from rating; discharge value is good. Quality water collection, prior to October 1977, was at the old bridge 0.6 mi (0.97 km) downstream from Dunn Creek. Prior to 1961 the data were published as "at Dryad", and from 1961-70, published as "near Doty". Both times published as 12020000.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1245	195	80	7.1	9.9	40	2
NOV							
14...	1215	6900	65	6.6	8.9	125	70
DEC							
05...	1200	2450	66	6.7	6.9	40	12
JAN , 1978							
03...	1205	520	61	7.3	4.2	20	4
FEB							
14...	1220	780	68	7.6	5.8	15	2
MAR							
13...	1140	585	75	6.9	6.9	25	3
APR							
17...	1310	440	69	7.6	8.1	25	3
MAY							
08...	1230	310	73	7.7	13.1	35	1
JUN							
12...	1240	245	73	7.6	14.4	--	2
JUL							
24...	1220	68	79	7.6	20.1	40	2
AUG							
14...	1230	66	80	7.7	16.6	45	2
SEP							
05...	1215	320	72	7.4	14.3	40	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	12.3	.15	.03	.01	.00	.00
NOV						
14...	12.1	.86	.09	.36	.00	.00
DEC						
05...	12.8	.84	.05	.07	.00	.00
JAN , 1978						
03...	13.3	.51	.04	.02	.01	.03
FEB						
14...	13.0	.56	.04	.02	.00	.00
MAR						
13...	13.2	.50	.09	.01	.01	.03
APR						
17...	12.4	.38	.03	.01	.00	.00
MAY						
08...	12.0	.31	.07	.02	.00	.00
JUN						
12...	11.0	.17	.04	.02	.01	.03
JUL						
24...	8.6	.13	.08	.03	.01	.03
AUG						
14...	9.7	.06	.06	.02	.02	.06
SEP						
05...	10.7	.24	.05	.02	.01	.03

12020900 SOUTH FORK CHEHALIS RIVER NEAR BOISTFORT, WA

LOCATION.--Lat 46°31'38", long 123°06'58", in SE¼NE¼ sec.13, T.12 N., R.4 W., Lewis County, Hydrologic Unit 17100103, on left bank 1.0 mi (1.6 km) downstream from Neiman Creek, 1.0 mi (1.6 km) southeast of Boistfort, and 2.7 mi (4.3 km) upstream from Stillman Creek.

DRAINAGE AREA.--44.9 mi² (116.3 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 280 ft (85 m), from topographic map.

REMARKS.--Records excellent except those for periods Jan. 20 to Feb. 7 and Feb. 21 to Apr. 11, which are fair. Many small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--13 years, 182 ft³/s (5.154 m³/s), 55.05 in/yr (1,398 mm/yr), 131,900 acre-ft/yr (163 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 6,200 ft³/s (176 m³/s) Dec. 4, 1975, gage height, 14.73 ft (4.490 m), from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of slope-area measurement at gage height 13.86 ft (4.225 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 1-2, 1967, gage height, 2.36 ft (0.719 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 1,900 ft³/s (53.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 2	2000	1,960	55.5	9.77	2.978	Dec. 13	2300	*2,770	78.4	*11.80	3.597
Dec. 11	0200	1.950	55.2	9.76	2.975						

Minimum discharge, 3.8 ft³/s (0.108 m³/s) Aug. 9, 10, gage height, 2.69 ft (0.820 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	475	448	112	300	130	145	111	73	22	8.8	12
2	36	1050	1340	107	420	125	140	99	67	20	8.4	18
3	33	451	1190	151	400	120	170	91	62	21	7.3	24
4	30	295	679	322	350	122	170	90	58	21	6.6	32
5	29	217	490	395	310	110	230	84	53	21	6.3	36
6	27	169	763	425	325	100	240	77	49	19	5.7	26
7	33	165	739	380	340	200	190	72	46	17	5.7	21
8	34	136	553	417	380	230	160	67	46	16	4.9	19
9	29	123	433	430	365	200	140	64	52	17	4.4	75
10	27	270	736	422	322	180	120	64	61	16	4.1	218
11	25	277	1570	373	282	165	110	116	55	16	5.1	123
12	24	247	1200	332	248	155	100	116	52	17	6.3	85
13	23	318	2200	365	218	155	96	172	60	15	9.6	67
14	22	912	2190	437	195	145	94	243	56	12	9.6	70
15	22	862	1450	390	195	137	88	275	53	12	8.4	58
16	21	586	1200	340	172	130	93	226	46	23	10	45
17	20	415	790	305	161	120	85	184	43	25	9.2	41
18	20	325	565	280	149	115	99	155	39	20	8.4	38
19	20	253	437	255	142	110	114	134	36	17	8.4	34
20	20	207	362	280	132	106	132	116	34	15	11	30
21	20	177	305	350	120	102	138	102	32	12	12	30
22	20	157	262	425	115	100	278	96	32	11	13	35
23	25	151	226	350	110	96	337	93	31	11	12	161
24	39	262	199	240	105	200	259	94	30	9.6	19	149
25	65	715	178	245	150	600	207	96	29	9.6	30	98
26	53	1200	161	200	158	450	182	96	28	11	23	77
27	44	804	149	180	150	310	159	125	26	19	17	63
28	41	626	140	165	138	250	142	125	23	17	14	55
29	55	628	142	150	---	210	127	104	20	14	12	51
30	213	505	129	145	---	180	119	91	23	11	11	46
31	195	---	121	145	---	155	---	81	---	10	10	---
TOTAL	1306	12960	21347	9163	6452	5508	4664	3659	1315	497.2	321.2	1837
MEAN	42.1	432	689	296	230	178	155	118	43.8	16.0	10.4	61.2
MAX	213	1200	2200	437	420	600	337	275	73	25	30	218
MIN	20	123	121	107	105	96	85	64	20	9.6	4.1	12
CFSM	.94	9.62	15.3	6.59	5.12	3.96	3.45	2.63	.98	.36	.23	1.36
IN.	1.08	10.74	17.69	7.59	5.35	4.56	3.86	3.03	1.09	.41	.27	1.52
AC-FT	2590	25710	42340	18170	12800	10930	9250	7260	2610	986	637	3640

CAL YR 1977 TOTAL 56412.99 MEAN 155 MAX 2200 MIN .37 CFSM 3.45 IN 46.74 AC-FT 111900
WTR YR 1978 TOTAL 69029.40 MEAN 189 MAX 2200 MIN 4.1 CFSM 4.21 IN 57.19 AC-FT 136900

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW¼SW¼ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi (4.8 km) southeast of Chehalis, and at mile 4.1 (6.6 km).

DRAINAGE AREA.--155 mi^2 (401 km^2).

PERIOD OF RECORD.-March 1929 to September 1931, July 1942 to current year. Chemical analyses July 1960 to September 1970, October 1974 to September 1975, October 1976 to September 1977; sediment records October 1961 to June 1965 (partial-record station).

REVISED RECORDS.--WSP 1012: 1943. WSP 1316: 1929-30(M), 1950(M). WSP 1716: Drainage area. WSP 1932: 1931(M), 1945-49, 1954(M), 1956(P), 1958(M), 1959-60.

GAGE.--Water-stage recorder. Altitude of gage is 190 ft (58 m), from topographic map. Prior to Oct. 1, 1929, nonrecording gage at same site at datum 1.0 ft (0.30 m) higher. Oct. 1, 1929, to July 5, 1962, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good. Cities of Chehalis and Centralia divert about 6 ft^3/s (0.17 m^3/s) from North Fork Newaukum River for municipal use. No regulation.

AVERAGE DISCHARGE.--38 years (water years, 1930-31, 1943-78), 509 ft^3/s (14.41 m^3/s), 368,800 acre-ft/yr (455 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft^3/s (292 m^3/s) Dec. 2, 1977, gage height, 12.49 ft (3.807 m); maximum gage height, 13.62 ft (4.151 m) Dec. 9, 1953; minimum discharge, 12 ft^3/s (0.34 m^3/s) Sept. 13, 14, 1949, Aug. 29, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft^3/s (113 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	1800	*10,300	292	*12.49	3.807	Dec. 13	1200	5,940	168	9.12	2.780

Minimum discharge, 42 ft^3/s (1.19 m^3/s) Aug. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	1170	1940	336	628	460	288	354	201	111	58	78
2	152	2170	8190	415	1330	390	296	318	186	106	60	100
3	138	1120	5370	943	1150	367	327	284	177	115	57	97
4	128	748	2680	1030	1000	415	309	268	165	108	54	102
5	118	544	1810	887	800	358	435	253	157	106	52	127
6	111	424	2120	810	850	322	440	232	145	104	51	104
7	122	531	1970	922	950	455	367	216	140	97	48	93
8	115	420	1500	1190	1100	616	318	207	135	95	47	85
9	111	418	1200	1250	1050	465	284	198	142	95	45	213
10	104	1340	1680	1100	901	400	260	198	186	95	44	747
11	97	1060	3100	1000	733	381	242	276	253	102	45	652
12	93	814	2640	950	622	381	225	256	198	95	63	367
13	97	1030	4400	978	532	354	222	272	213	89	83	288
14	95	1510	3760	1150	470	340	249	349	249	82	60	292
15	89	1470	3170	936	490	300	242	485	354	80	76	219
16	85	1150	2150	789	445	280	450	415	327	135	89	183
17	82	931	1570	698	405	264	485	336	253	140	76	198
18	81	755	1260	622	376	249	496	288	213	100	63	183
19	81	608	1030	634	360	239	616	249	186	89	61	155
20	80	502	880	538	340	225	908	228	168	83	66	140
21	79	427	761	1110	320	216	1010	210	155	76	74	157
22	79	382	652	1370	300	210	1500	210	150	72	71	160
23	85	419	580	1070	290	249	1430	232	142	66	63	376
24	107	667	532	824	280	440	971	222	137	61	71	400
25	150	1980	480	684	400	562	726	222	140	58	120	284
26	201	2520	440	634	600	604	622	232	132	63	89	228
27	164	1790	405	532	550	460	598	331	125	85	71	201
28	142	2030	485	490	480	430	508	331	117	71	61	186
29	215	2000	445	465	---	395	435	284	113	63	55	171
30	612	1440	400	420	---	358	395	246	115	60	51	165
31	574	---	358	415	---	318	---	219	---	57	52	---
TOTAL	4559	32380	57958	25192	17752	11503	15654	8421	5374	2759	1976	6751
MEAN	147	1079	1870	813	634	371	522	272	179	89.0	63.7	225
MAX	612	2520	8190	1370	1330	616	1500	485	354	140	120	747
MIN	79	382	358	336	280	210	222	198	113	57	44	78
CFSM	.95	6.96	12.1	5.25	4.09	2.39	3.37	1.76	1.16	.57	.41	1.45
IN.	1.09	7.77	13.91	6.05	4.26	2.76	3.76	2.02	1.29	.66	.47	1.62
AC-FT	9040	64230	115000	49970	35210	22820	31050	16700	10660	5470	3920	13390

CAL YR 1977 TOTAL 172262 MEAN 472 MAX 8190 MIN 28 CFSM 3.05 IN 41.34 AC-FT 341700
WTR YR 1978 TOTAL 190279 MEAN 521 MAX 8190 MIN 44 CFSM 3.36 IN 45.67 AC-FT 377400

12025500 CHEHALIS RIVER AT CENTRALIA, WA

LOCATION.--Lat 46°42'45", long 122°58'39", in NW¼SE¼ sec.7, T.14 N., R.2 W., Lewis County, Hydrologic Unit 17100103, at Mellen Street bridge, in Centralia.

PERIOD OF RECORD.--Water years 1910-11, 1977 to current year.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1345	420	98	6.5	12.2	50	3
NOV							
14...	1300	5600	67	6.5	8.8	90	15
DEC							
05...	1240	12000	61	6.5	7.3	100	40
JAN , 1978							
03...	1245	1410	86	6.9	2.7	35	6
FEB							
02...	1300	5000	85	7.2	8.8	80	30
MAR							
13...	1220	1400	76	6.8	7.9	35	6
APR							
17...	1355	1370	73	7.0	9.6	45	6
MAY							
08...	1315	710	85	7.2	14.6	20	3
JUN							
12...	1325	580	80	7.2	16.5	--	3
JUL							
24...	1310	187	98	7.7	23.8	45	3
AUG							
14...	1320	235	128	7.1	21.0	25	2
SEP							
05...	1250	670	92	7.2	17.2	35	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	9.9	.19	.06	.05	.02	.06
NOV						
14...	11.1	.80	.09	.08	.01	.03
DEC						
05...	10.5	.98	.12	.12	.01	.03
JAN , 1978						
03...	13.1	.64	.07	.04	.02	.06
FEB						
02...	11.7	.56	.16	.13	.02	.06
MAR						
13...	12.0	.54	.10	.03	.01	.03
APR						
17...	10.6	.35	.07	.04	.02	.06
MAY						
08...	10.4	.29	.12	.04	.01	.03
JUN						
12...	8.7	.14	.10	.05	.03	.09
JUL						
24...	10.2	.01	.08	.13	.07	.21
AUG						
14...	5.7	.10	.16	.09	.06	.18
SEP						
05...	8.3	.10	.14	.06	.04	.12

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW¼NW¼ sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft (46 m) downstream from logging bridge, 0.4 mi (0.6 km) downstream from Hospital Creek, 5.8 mi (9.3 km) southeast of Vail, and at mile 28.8 (46.3 km).

DRAINAGE AREA.--40.0 mi² (103.6 km²).

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR WA-75-1: 1974.

GAGE.--Water-stage recorder. Altitude of gage is 710 ft (216 m), from topographic map.

REMARKS. Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--11 years, 211 ft³/s (5.976 m³/s), 71.63 in/yr (1,819 mm/yr), 152,900 acre-ft/yr (189 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft³/s (195 m³/s) Jan. 20, 1972, gage height, 10.93 ft (3.331 m); minimum, 18 ft³/s (0.51 m ³/s) part or all of each day Aug. 22-24, 26-31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,250 ft³/s (35.4 m³/s) and maximum (*).

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 2	1200	*4,200	119	*9.14	2.786	Dec. 13	1600	1,850	52.4	7.18	2.188

Minimum discharge, 26 ft³/s (0.74 m³/s) Aug. 9-10, gage height, 3.25 ft (0.991 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	619	673	137	231	158	127	158	90	49	30	51
2	76	777	2940	131	520	144	137	144	85	54	30	59
3	70	428	1460	243	480	142	142	133	80	50	29	55
4	65	299	910	488	391	137	160	124	75	48	29	67
5	60	221	630	544	342	129	213	116	72	47	29	72
6	60	179	832	520	370	120	196	108	67	44	29	67
7	61	212	796	408	391	255	173	103	66	43	28	56
8	55	167	552	405	464	328	153	97	63	43	28	53
9	52	172	436	426	468	252	140	93	83	43	27	144
10	49	371	630	401	394	205	129	99	86	43	27	252
11	47	317	1160	359	324	183	120	146	93	42	29	158
12	46	280	1220	335	276	163	112	131	85	40	42	114
13	48	410	1570	321	237	160	110	163	99	39	33	99
14	44	656	1380	317	228	146	110	255	103	38	30	86
15	43	593	1180	288	213	135	114	291	101	38	49	75
16	42	478	952	258	188	127	158	222	95	64	37	67
17	41	388	665	231	175	120	168	180	86	44	33	67
18	40	318	504	207	168	114	228	156	80	40	31	59
19	39	255	408	194	160	108	310	137	75	38	33	55
20	38	208	338	175	156	103	359	124	70	36	33	53
21	39	177	297	335	146	97	342	114	67	35	35	55
22	38	158	264	380	137	93	426	114	64	34	32	73
23	51	173	237	310	129	118	426	110	62	34	33	261
24	65	195	216	264	124	199	349	106	60	33	60	188
25	90	730	205	234	186	294	294	99	59	33	55	137
26	99	894	188	216	231	276	267	106	56	36	43	108
27	76	642	175	191	196	222	249	120	54	37	38	95
28	71	708	165	178	175	191	219	120	51	34	34	88
29	214	708	173	165	---	165	194	110	51	32	33	76
30	497	532	158	153	---	149	175	103	50	31	32	75
31	347	---	146	163	---	135	---	95	---	31	39	---
TOTAL	2646	12265	21460	8977	7500	5168	6300	4177	2228	1253	1070	2865
MEAN	85.4	409	692	290	268	167	210	135	74.3	40.4	34.5	95.5
MAX	497	894	2940	544	520	328	426	291	103	64	60	261
MIN	38	158	146	131	124	93	110	93	50	31	27	51
CFSM	2.14	10.2	17.3	7.25	6.70	4.18	5.25	3.38	1.86	1.01	.86	2.39
IN.	2.46	11.41	19.96	8.35	6.97	4.81	5.86	3.88	2.07	1.17	1.00	2.66
AC-FT	5250	24330	42570	17810	14880	10250	12500	8290	4420	2490	2120	5680

CAL YR 1977 TOTAL 68652 MEAN 188 MAX 2940 MIN 24 CFSM 4.70 IN 63.84 AC-FT 136200
WTR YR 1978 TOTAL 75909 MEAN 208 MAX 2940 MIN 27 CFSM 5.20 IN 70.59 AC-FT 150600

12026150 SKOOKUMCHUCK RIVER BELOW BLOODY RUN CREEK NEAR CENTRALIA, WA

LOCATION.--Lat 46°47'25", long 122°44'03", in NW¼NW¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank, 0.7 mi (1.1 km) downstream from Bloody Run Creek, 1.2 mi (1.9 km) downstream from Skookumchuck Dam, 12 mi (19 km) northeast of Centralia, and at mile 20.7 (33.3 km).

DRAINAGE AREA.--65.9 mi²(170.7 km²). Area at site used prior to August 1969, 61.7 mi² (159.8 km²).

PERIOD OF RECORD.--April 1929 to November 1933, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316 and 1736. Published as "near Centralia" (12026000) 1929 to July 1969.

GAGE.--Water-stage recorder. Datum of gage is 317.34 ft (96.725 m) National Geodetic Vertical Datum of 1929. Apr. 1, 1929, to Sept. 30, 1931, and Feb. 1, 1932, to Dec. 6, 1933, nonrecording gage at site 1.1 mi (1.8 km) upstream at different datum. Oct. 1939 to July 1969 at site 1.3 mi (2.1 km) upstream at datum 301.04 ft (91.757 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Skookumchuck Dam since January 1971. No diversions above station.

AVERAGE DISCHARGE.--43 years (water years 1930-33, 1940-78), 254 ft³/s (7.193 m³/s), 52.34 in/yr (1,329 mm/yr), 184,000 acre-ft/yr (227 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft³/s (190 m³/s), Dec. 9, 1953, gage height, 48.59 ft (14.810 m), site and datum then in use; minimum 12 ft³/s (0.34 m³/s) May 28, 1970, caused by pumping during dam construction.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 2	1415	*5,680	161	*11.63	3.545	Dec. 13	2115	2,700	76.5	10.06	3.066

Minimum discharge, 84 ft³/s (2.38 m³/s) Mar. 20, gage height, 5.08 ft (1.548 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	140	630	357	328	131	162	192	127	106	104	129
2	125	210	4150	339	363	129	160	174	131	104	104	129
3	125	245	2760	330	384	129	166	160	140	104	104	125
4	125	239	1510	351	390	129	168	152	140	104	102	127
5	125	236	985	387	390	129	212	144	140	104	102	129
6	152	233	980	420	393	127	228	134	119	104	101	129
7	170	233	1130	426	399	115	207	127	106	104	101	129
8	170	233	863	438	408	101	185	119	106	104	101	129
9	167	233	650	453	417	95	168	115	108	106	101	133
10	167	245	583	467	420	90	154	115	110	106	101	150
11	167	245	1610	464	417	88	144	144	110	106	102	136
12	165	242	1930	460	414	86	136	160	110	106	102	133
13	165	251	2420	460	411	97	138	164	108	106	101	133
14	165	272	2450	460	405	104	140	212	108	104	101	133
15	165	269	1890	453	399	102	136	307	108	104	101	129
16	162	299	1550	444	390	102	194	272	108	106	99	129
17	162	317	1050	435	378	102	228	221	108	104	99	131
18	162	323	768	423	363	101	247	185	110	104	99	131
19	162	320	590	414	345	101	333	162	110	104	99	129
20	162	311	530	402	330	102	464	146	110	104	101	129
21	162	299	534	411	320	106	474	133	110	104	102	129
22	162	284	538	417	305	104	548	127	108	104	101	131
23	162	275	520	414	270	106	598	140	108	102	101	150
24	162	278	513	408	189	106	474	140	108	104	101	142
25	167	359	474	399	136	115	378	127	108	104	110	140
26	167	475	444	390	144	209	325	127	108	104	121	138
27	165	518	432	381	136	223	300	140	106	104	121	138
28	147	574	420	369	133	223	267	146	106	104	127	174
29	135	566	408	357	---	212	235	142	106	104	127	207
30	145	562	396	339	---	192	212	136	106	104	127	216
31	127	---	378	328	---	174	---	133	---	102	127	---
TOTAL	4789	9286	34086	12596	9377	3930	7781	4896	3391	3234	3290	4187
MEAN	154	310	1100	406	335	127	259	158	113	104	106	140
MAX	170	574	4150	467	420	223	598	307	140	106	127	216
MIN	125	140	378	328	133	86	136	115	106	102	99	125
AC-FT	9500	18420	67610	24980	18600	7800	15430	9710	6730	6410	6530	8300

CAL YR 1977 TOTAL 80977 MEAN 222 MAX 4150 MIN 52 AC-FT 160600
WTR YR 1978 TOTAL 100843 MEAN 276 MAX 4150 MIN 86 AC-FT 200000

12026400 SKOOKUMCHUCK RIVER NEAR BUCODA, WA

LOCATION.--Lat 46°46'20", long 122°55'23", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, on left bank 100 ft (30 m) downstream from bridge on State Highway 507, 3.3 mi (5.3 km) southwest of Bucoda, and at mile 6.4 (10.3 km).

DRAINAGE AREA.--112 mi^2 (290 km^2).

PERIOD OF RECORD.--December 1967 to current year, water temperatures October 1968 to September 1971, sediment records July 1968 to September 1971.

GAGE.--Water-stage recorder. Datum of gage is 194.60 ft (59.314 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. Flow regulated by Skookumchuck River Dam since January 1971. Up to 30 ft^3/s (0.85 m^3/s) diverted at point 0.5 mi (0.8 km) upstream for consumptive use at Centralia Steam Electric Project. Other minor diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--10 years, 381 ft^3/s (10.79 m^3/s), 276,000 acre-ft/yr (340 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,190 ft^3/s (232 m^3/s) Jan. 21, 1972, gage height, 16.82 ft (5.127 m); minimum, 21 ft^3/s (0.59 m^3/s) Aug. 15, 16, 18, 19, 20, 1970, gage height, 3.85 ft (1.173 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,750 ft^3/s (77.9 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge ($m^3.s$)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	2400	*7,170	203	*16.18	4.932	Dec. 14	2000	3,790	107	12.93	3.941

Minimum discharge, 93 ft^3/s (2.63 m^3/s) Aug. 5, 6, 9, 10, gage height, 4.50 ft (1.372 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	284	1000	433	398	231	234	286	168	106	106	140
2	132	610	4420	412	591	210	237	255	161	124	106	156
3	128	487	5040	412	612	198	255	234	171	129	104	156
4	123	406	2230	507	566	213	231	213	176	131	97	161
5	121	369	1370	594	535	204	276	201	176	129	95	171
6	134	340	1310	668	545	192	339	190	161	129	97	151
7	186	334	1520	644	535	231	311	184	133	126	102	140
8	180	308	1220	724	570	262	262	168	131	122	104	131
9	192	312	916	792	584	222	237	161	137	114	98	158
10	167	415	919	932	570	190	219	156	131	126	95	297
11	165	429	2430	836	542	179	187	190	140	126	97	252
12	168	409	2770	752	518	171	173	219	140	126	114	192
13	172	441	3290	724	503	166	181	222	142	126	116	168
14	170	582	3650	812	468	171	201	269	144	124	100	166
15	170	596	3010	767	458	158	195	398	140	124	102	163
16	169	564	2340	693	444	154	272	391	135	126	100	156
17	166	530	1580	619	423	154	325	332	137	133	98	142
18	163	501	1150	566	405	161	325	283	135	126	98	135
19	168	473	893	549	388	166	412	231	133	118	98	142
20	174	454	742	521	367	149	622	195	122	116	106	154
21	171	442	680	644	353	137	660	181	129	122	120	140
22	174	427	640	712	343	137	756	171	129	122	102	144
23	181	412	600	626	307	173	868	184	129	110	97	314
24	166	447	570	566	255	219	700	190	129	112	97	286
25	191	711	540	535	213	279	556	176	129	122	110	213
26	246	1020	520	507	321	430	465	171	129	124	135	181
27	214	837	500	458	283	419	433	192	122	118	133	158
28	204	843	465	440	252	370	391	213	116	110	135	166
29	193	917	475	430	---	353	346	201	120	106	142	228
30	300	824	465	405	---	307	314	171	112	106	137	249
31	274	---	447	391	---	272	---	161	---	104	137	---
TOTAL	5500	15724	47702	18671	12349	6878	10983	6789	4157	3737	3378	5410
MEAN	177	524	1539	602	441	222	366	219	139	121	109	180
MAX	300	1020	5040	932	612	430	868	398	176	133	142	314
MIN	121	284	447	391	213	137	173	156	112	104	95	131
AC-FT	10910	31190	94620	37030	24490	13640	21780	13470	8250	7410	6700	10730

CAL YR 1977 TOTAL 112369 MEAN 308 MAX 5040 MIN 56 AC-FT 222900
WTR YR 1978 TOTAL 141278 MEAN 387 MAX 5040 MIN 95 AC-FT 280200

12027500 CHEHALIS RIVER NEAR GRAND MOUND, WA

LOCATION.--Lat 46°46'34", long 123°02'04", in NE¼NE¼ sec.22, T.15 N., R.3 W., Thurston County, Hydrologic Unit 17100103, on left bank at downstream side of highway bridge at Meadows, 1.5 mi (2.4 km) southwest of Grand Mound, 7.0 mi (11.3 km) downstream from Skookumchuck River, and at mile 59.9 (96.4 km).

DRAINAGE AREA.--895 mi^2 (2,318 km^2).

PERIOD OF RECORD.--Water discharge: October 1928 to current year. Water temperatures March 1952 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1932-34(M).

GAGE.--Water-stage recorder. Datum of gage is 123.65 ft (37.689 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 3, 1934, nonrecording gage at present site at datum 3.0 ft (0.91 m) higher.

REMARKS.--Records excellent. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft^3/s (0.85 m^3/s) of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 6 ft^3/s (0.17 m^3/s) for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--50 years, 2,833 ft^3/s (80.23 m^3/s), 42.99 in/yr (1,092 mm/yr), 2,053,000 acre-ft/yr (2,530 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft^3/s (1,390 m^3/s) Jan. 21, 1972, gage height, 18.21 ft (5.550 m); minimum, 82 ft^3/s (2.32 m^3/s) Aug. 30, 1967; minimum gage height, 0.83 ft (0.253 m) Aug. 27, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s (453 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 3	1700	*36,500	1,030	*16.79	5.118	Dec. 15	0730	28,400	804	15.69	4.782

Minimum discharge, 250 ft^3/s (7.08 m^3/s) Aug. 11, gage height, 2.25 ft (0.686 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	927	3250	6650	2200	2620	2480	2190	1890	1150	502	323	379
2	832	9750	15600	2060	5040	2220	2040	1730	1070	493	323	46
3	748	8000	30900	2080	6340	2040	2020	1590	1000	498	319	645
4	684	4820	24400	3150	5500	2160	2090	1500	951	498	305	670
5	634	3420	15500	4360	4570	2060	2260	1480	895	489	292	838
6	601	2680	11100	5530	4440	1900	2900	1360	838	480	283	772
7	652	2410	12000	4890	4360	2130	2620	1270	763	460	275	630
8	707	2210	10000	5060	5270	3270	2270	1190	732	444	268	556
9	663	1950	7480	5800	5590	3050	2020	1120	741	428	262	730
10	629	3200	6470	6880	5210	2620	1850	1090	878	432	253	2600
11	585	4740	15100	6360	4440	2350	1690	1230	955	440	253	3080
12	562	3980	18200	5430	3860	2220	1570	1540	955	440	274	2110
13	557	3940	19200	4840	3440	2040	1490	1580	913	428	351	1590
14	558	6460	24000	6340	3090	2090	1530	2370	962	412	361	1590
15	539	10600	27100	6440	3000	1920	1490	3230	1070	400	340	1350
16	524	8840	22600	5610	2800	1780	1660	3000	1070	432	383	1120
17	506	6290	18600	4720	2620	1690	1860	2460	962	556	393	983
18	491	4690	14100	4180	2450	1610	2010	2070	856	498	365	906
19	488	3680	9180	4110	2320	1530	2400	1800	774	452	340	820
20	494	3050	6500	3810	2190	1450	3410	1580	719	408	344	760
21	490	2600	5110	4290	2070	1350	3590	1430	665	389	365	736
22	484	2280	4330	6590	1970	1290	4590	1340	645	375	390	766
23	498	2100	3770	6220	1860	1310	6080	1380	630	358	375	2000
24	603	2660	3390	5030	1780	1940	5100	1380	615	333	375	3410
25	871	3920	3170	4220	2090	3770	3940	1320	600	330	590	2430
26	1270	12400	2900	3760	3030	7350	3250	1290	595	337	575	1840
27	1250	11100	2680	3320	2990	5380	2910	1470	575	389	489	1460
28	1050	8880	2520	3000	2680	3990	2580	1640	543	428	428	1230
29	1110	8680	2620	2850	---	3410	2250	1540	516	386	400	1150
30	2700	8320	2570	2580	---	2850	2030	1370	511	354	379	1060
31	3760	---	2370	2450	---	2480	---	1230	---	333	365	---
TOTAL	26467	160900	350110	138160	97620	77730	77690	50470	24149	13202	11038	38675
MEAN	854	5363	11290	4457	3486	2507	2590	1628	805	426	356	1289
MAX	3760	12400	30900	6880	6340	7350	6080	3230	1150	556	590	3410
MIN	484	1950	2370	2060	1780	1290	1490	1090	511	330	253	379
CFSM	.95	5.99	12.6	4.98	3.90	2.80	2.89	1.82	.90	.48	.40	1.44
IN.	1.10	6.69	14.55	5.74	4.06	3.23	3.23	2.10	1.00	.55	.46	1.61
AC-FT	52500	319100	694400	274000	193600	154200	154100	100100	47900	26190	21890	76710

CAL YR 1977 TOTAL 890643 MEAN 2440 MAX 30900 MIN 147 CFSM 2.73 IN 37.02 AC-FT 1767000
WTR YR 1978 TOTAL 1066211 MEAN 2921 MAX 30900 MIN 253 CFSM 3.26 IN 44.32 AC-FT 2115000

1203100 CHEHALIS RIVER AT PORTER, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, in downstream end of left bank pier of Chehalis River bridge at mouth of Porter Creek, 0.1 mi (0.2 km) west of Porter, and at mile 33.3 (53.6 km).

DRAINAGE AREA.--1,294 mi² (3,351 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--January 1952 to September 1972, water years 1973-75 (annual maximum), May 1975 to current year.

REVISED RECORDS.--WSP 1716: Drainage area. WSP 1932: 1954, 1956, 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 23.64 ft (7.205 m), National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 6 ft³/s (0.17 m³/s) for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--23 years (water years 1953-72, 1976-78), 4,220 ft³/s (119.5 m³/s), 44.29 in/yr (1,125 mm/yr), 3,057,000 acre-ft/yr (3,770 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,600 ft³/s (1,570 m³/s) Jan. 22, 1972, gage height, 23.88 ft (7.279 m); minimum, 164 ft³/s (4.64 m³/s) Oct. 17, 1952, gage height, 2.25 ft (0.686 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 28, 1937, reached a stage of 24.7 ft (7.53 m), from levels by Grays Harbor County.
Flood of December 1933 reached a stage of 23.13 ft (7.050 m), from river profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20,000 ft³/s (566 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 4	1900	38,200	1,080	22.08	6.730	Dec. 15	2300	*38,900	1,100	*22.18	6.760

Minimum discharge, 362 ft³/s (10.3 m³/s) Aug. 10, gage height, 3.24 ft (0.988 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	5620	11800	3800	4230	3780	3660	2870	1700	720	462	534
2	1210	9640	20500	3550	6500	3480	3380	2630	1570	685	454	642
3	1070	12200	28800	3540	9280	3200	3310	2420	1450	685	442	755
4	975	8760	35600	4580	8940	3280	3310	2250	1370	690	422	940
5	905	5880	31200	6450	7570	3250	3340	2170	1290	675	401	980
6	865	4690	23300	7800	6830	3010	4030	2060	1210	665	386	1040
7	895	4040	18000	7970	6810	3180	3990	1910	1120	642	380	905
8	935	3770	16900	7980	7660	4360	3550	1790	1050	618	380	815
9	925	3360	14100	8900	8450	4670	3160	1690	1090	602	374	1010
10	870	4030	12100	10400	8180	4150	2860	1630	1140	586	365	1800
11	815	6430	17800	10600	7190	3730	2630	1830	1270	594	368	3620
12	770	6100	25200	9380	6300	3490	2430	2110	1310	594	386	3080
13	760	5620	29900	8360	5620	3250	2300	2350	1260	582	438	2320
14	735	8260	31700	9330	5050	3150	2260	3140	1280	566	478	2000
15	725	12900	36100	10400	4750	3000	2250	4190	1380	546	546	1870
16	695	13300	36900	9510	4510	2750	2310	4380	1430	582	498	1550
17	665	10500	32900	8200	4200	2590	2630	3730	1350	626	530	1370
18	646	7910	27800	7090	3960	2460	2780	3180	1210	690	514	1260
19	638	6320	19900	6640	3740	2330	3330	2750	1090	618	502	1150
20	634	5280	13700	6300	3550	2230	4400	2420	1010	566	478	1060
21	634	4580	10300	6310	3360	2100	5020	2150	955	526	486	1070
22	630	4060	8470	8670	3170	2010	5780	1970	920	502	506	1370
23	660	3720	7110	9400	3000	2020	7480	1940	900	482	518	3670
24	735	3890	6210	8180	2860	2510	7330	1930	875	462	546	5220
25	1000	5690	5590	6940	3050	5190	5990	1890	845	446	586	4330
26	1570	12200	5080	6110	3990	9540	4960	1930	840	458	770	3310
27	1780	15400	4680	5460	4400	8750	4390	2090	815	526	680	2670
28	1540	13600	4400	4930	4080	6610	3930	2350	780	582	602	2250
29	1640	13300	4390	4620	---	5550	3480	2310	730	570	546	1980
30	2750	13300	4420	4280	---	4740	3130	2080	730	522	514	1810
31	5030	---	4090	4040	---	4130	---	1860	---	486	494	---
TOTAL	35052	233850	548940	219720	151130	118490	113400	74000	33970	18094	15052	56381
MEAN	1131	7795	17710	7088	5398	3822	3780	2387	1132	584	486	1879
MAX	5030	15400	36900	10600	9280	9540	7480	4380	1700	720	770	5220
MIN	630	3360	4090	3540	2860	2010	2250	1630	730	446	365	534
CFSM	.87	6.02	13.7	5.48	4.17	2.95	2.92	1.85	.88	.45	.38	1.45
IN.	1.01	6.72	15.78	6.32	4.34	3.41	3.26	2.13	.98	.52	.43	1.62
AC-FT	69530	463800	1089000	435800	299800	235000	224900	146800	67380	35890	29860	111800

CAL YR 1977 TOTAL 1339245 MEAN 3669 MAX 36900 MIN 270 CFSM 2.84 IN 38.50 AC-FT 2656000
WTR YR 1978 TOTAL 1618079 MEAN 4433 MAX 36900 MIN 365 CFSM 3.43 IN 46.52 AC-FT 3209000

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1960.
pH: July 1959 to September 1960.
WATER TEMPERATURES: July 1959 to September 1960, October 1961 to July 1972.
SUSPENDED SEDIMENT: October 1961 to September 1971.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FFCAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
OCT , 1977												
19...	0900	638	96	6.8	11.2	2	--	10.3	12	27	34	3
NOV												
14...	1230	8450	76	6.3	10.2	15	--	10.6	290	2600	21	5
DEC												
21...	1130	10300	47	6.8	--	7	--	10.7	K82	430	18	8
JAN , 1978												
17...	1030	8280	60	7.7	7.2	8	--	11.0	K30	K40	23	5
FEB												
06...	1130	6770	61	7.2	8.0	6	--	--	60	E77	23	3
MAR												
07...	0915	3080	79	6.9	7.5	4	--	11.1	K90	66	30	8
APR												
10...	1200	2860	75	7.2	10.2	3	--	10.6	64	2	28	4
MAY												
09...	1100	1700	88	7.1	14.2	2	--	9.7	11	4	32	3
JUN												
05...	1330	1290	78	7.6	10.3	1	--	9.9	--	--	29	0
JUL												
05...	1110	675	91	7.6	6.6	--	1.1	10.0	K40	3	37	4
AUG												
07...	1200	383	107	7.0	21.0	--	.90	8.0	28	K2	37	3
SEP												
12...	1130	3080	94	7.5	--	--	7.0	9.0	K120	K800	32	7

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT , 1977												
19...	8.8	2.9	6.0	27	.4	.8	38	0	31	9.6	6.5	5.6
NOV												
14...	5.3	1.9	5.6	36	.5	.7	20	0	16	16	7.5	4.9
DEC												
21...	4.2	1.9	4.2	32	.4	.7	13	0	11	3.3	7.2	4.4
JAN , 1978												
17...	6.1	1.8	4.4	29	.4	.7	21	0	17	.7	5.0	4.4
FEB												
06...	5.9	2.0	4.8	31	.4	.5	24	0	20	2.4	7.5	4.0
MAR												
07...	8.4	2.2	4.9	26	.4	.6	27	0	22	5.4	5.7	4.4
APR												
10...	7.2	2.5	4.6	26	.4	.6	30	0	25	3.0	5.1	4.1
MAY												
09...	8.9	2.4	5.2	26	.4	.5	35	0	29	4.4	5.9	4.6
JUN												
05...	7.7	2.4	5.5	29	.4	.6	35	0	29	1.4	4.6	4.7
JUL												
05...	10	2.9	6.1	26	.4	.8	--	--	33	--	7.3	5.5
AUG												
07...	9.4	3.3	7.6	30	.5	.9	--	--	34	--	8.9	6.0
SEP												
12...	8.6	2.5	6.0	28	.5	1.1	--	--	25	--	14	5.3

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
OCT , 1977										
19...	0900	1	0	1	500	500	0	<10	<9	1
JAN , 1978										
17...	1030	0	0	0	100	100	0	8	7	1
APR										
10...	1200	1	0	1	100	0	100	1	0	1
JUL										
05...	1110	2	1	1	200	0	200	4	2	2

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
OCT , 1977										
19...	30	20	10	<50	<50	0	<10	<10	0	390
JAN , 1978										
17...	10	10	0	0	0	0	29	27	2	1100
APR										
10...	0	0	0	1	0	1	3	1	2	590
JUL										
05...	0	0	0	3	3	0	13	9	4	590

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)
OCT , 1977										
19...	--	310	<100	<98	2	20	0	20	.0	.0
JAN , 1978										
17...	--	110	110	110	4	30	20	10	.0	.0
APR										
10...	--	140	6	4	2	20	10	10	.0	.0
JUL										
05...	400	190	33	30	3	30	30	0	.1	.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1977										
19...	.0	0	0	0	<10	<10	0	20	20	0
JAN , 1978										
17...	.0	0	0	0	1	1	0	40	20	20
APR										
10...	.0	0	0	0	0	0	0	20	10	10
JUL										
05...	.0	2	1	1	0	0	0	20	10	10

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)
OCT , 1977 19...	.1	18	68	68	.09	117	0	.37	.05	--	--	--
NOV 14...	.0	15	70	51	.10	1600	52	.94	.01	--	--	--
DEC 21...	.0	15	45	44	.06	1250	35	.51	.02	--	--	--
JAN , 1978 17...	.1	14	51	47	.07	1140	28	.80	.01	--	--	--
FEB 06...	.1	15	47	52	.06	859	38	.78	.04	.08	.12	.03
MAR 07...	.0	15	53	55	.07	441	19	.58	.03	.20	.23	.10
APR 10...	.0	15	57	54	.08	440	2	.51	.04	.23	.27	.13
MAY 09...	.0	17	59	62	.08	271	7	.38	.01	.30	.31	.21
JUN 05...	.0	16	52	59	.07	181	5	.33	.01	.36	.37	.11
JUL 05...	.0	18	66	71	.09	120	10	.35	.01	.23	.24	.09
AUG 07...	.0	18	75	75	.10	77.6	0	.23	.00	.29	.29	.02
SEP 12...	.0	15	75	68	.10	624	18	.85	.10	.60	.70	.00

DATE	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977 19...	.07	--	--	.05	.05	--	4.7	.3	7	12	95
NOV 14...	.21	--	--	.08	.03	4.8	--	--	45	1030	76
DEC 21...	.84	--	--	.04	.03	3.3	--	--	35	973	71
JAN , 1978 17...	.22	--	--	.06	.04	--	2.4	.4	19	425	73
FEB 06...	.09	.90	4.0	.04	.02	3.8	--	--	17	311	67
MAR 07...	.13	.81	3.6	.06	.03	3.1	--	--	7	58	81
APR 10...	.14	.78	3.5	.03	.01	--	1.6	.5	7	54	80
MAY 09...	.10	.69	3.1	.03	.00	1.8	--	--	7	32	92
JUN 05...	.26	.70	3.1	.01	.02	2.1	--	--	5	17	83
JUL 05...	.15	.59	2.6	.04	.04	--	2.1	--	3	5.5	94
AUG 07...	.27	.52	2.3	.02	.01	3.6	--	--	4	4.1	92
SEP 12...	1.4	1.6	6.9	.08	.03	6.9	--	--	21	175	93

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO JUNE 1978

DATE	NOV 14,77	MAR 7,78	MAY 9,78	JUN 5,78
TIME	1230	0915	1100	1330
TOTAL CELLS/ML	260	190	760	800
DIVERSITY: DIVISION	1.1	0.0	0.2	1.3
.CLASS	1.4	0.0	0.2	1.3
..ORDER	1.4	0.5	1.2	2.1
...FAMILY	3.1	2.6	2.3	3.0
....GENUS	3.1	2.8	2.8	3.1

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	180#	22
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	14	2	--	-
...SCENEDESMACEAE								
....SCENEDESMUS	16	6	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	14	2	22	3
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	--	-	8	4	330#	43	130#	17
....MELOSIRA	--	-	16	8	71	9	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	8	4	28	4	45	6
....COCCONEIS	24	9	8	4	--	-	45	6
....RHOICOSPHENIA	--	-	--	-	14	2	--	-
...CYMBELLACEAE								
....CYMBELLA	32	12	8	4	14	2	89	11
...DIATOMACEAE								
....DIATOMA	24	9	--	-	--	-	--	-
...EUNOTIACEAE								
....EUNOTIA	--	-	8	4	--	-	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	14	2	--	-
....SYNEDRA	8	3	24	13	57	7	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	32	12	65#	33	42	6	--	-
...NAVICULACEAE								
....NAVICULA	24	9	41#	21	85	11	110	14
...NITZSCHIACEAE								
....NITZSCHIA	16	6	8	4	85	11	67	8
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....DINOBRYON	16	6	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROCCOCCALES								
...CHROCCOCCAEAE								
....ANACYSTIS	--	-	--	-	--	-	89	11
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	71#	27	--	-	--	-	--	-
...RIVULARIACEAE								
....RAPHIDIOPSIS	--	-	--	-	--	-	22	3

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

Additional phytoplankton data available from the District office in Tacoma.

DATE	TIME	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO- SURE (DAYS)
APR , 1978						
10...	1200	.866	1.26	.390	.300	34
MAY						
09...	1100	.236	.394	.690	.240	29

SAMPLING METHOD: Polyethylene strip.

12035000 SATSOP RIVER NEAR SATSOP, WA

LOCATION.--Lat 47°00'03", long 123°29'37", in NE¼SE¼ sec.36, T.18 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, in west pier of bridge on old U.S. Highway 410, 0.6 mi (1.0 km) west of Satsop, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--299 mi^2 (774 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year.

REVISED RECORDS.--WSP 1286: 1930-35(M), 1937(M). WSP 1716: Drainage area. WSP 1932: 1945, 1949(M), 1951(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1938, nonrecording gage at site 60 ft (18 m) upstream at datum 20.9 ft (6.37 m) higher.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years, 2,027 ft^3/s (57.40 m^3/s), 92.06 in/yr (2,338 mm/yr), 1,469,000 acre-ft/yr, (1,810 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 46,600 ft^3/s (1,320 m^3/s) Jan. 22, 1935, elevation, 38.9 ft (11.86 m), from floodmarks, present datum; minimum, 166 ft^3/s (4.70 m^3/s) Sept. 21, 1938; minimum elevation, 21.66 ft (6.602 m), present datum, Sept. 3-6, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of 37.1 ft (11.31 m), from high-water mark, at railroad bridge 300 ft (91 m) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft^3/s (382 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 2	0100	20,600	583	32.00	9.754	Dec. 2	1500	*25,000	708	*33.10	10.09
Nov. 14	1200	17,100	484	31.03	9.458	Dec. 11	0600	21,200	600	32.17	9.805
Nov. 25	2400	15,800	447	30.62	9.333	Dec. 13	0800	17,900	507	31.26	9.528

Minimum discharge, 346 ft^3/s (9.80 m^3/s) Aug. 9, 10, gage height, 22.51 ft (6.861 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	781	8960	5870	1630	1990	1230	1550	1150	1100	556	380	718
2	724	11600	18700	1550	4450	1170	1550	1090	1020	544	380	1950
3	682	5120	12300	1820	6220	1130	1670	1030	949	538	375	1310
4	646	3520	7560	3660	4720	1110	1820	983	907	532	370	1280
5	622	2780	5620	4320	3540	1060	2010	943	858	520	365	1120
6	604	2370	6650	3900	3260	1030	2200	910	795	508	360	956
7	622	2840	7140	3540	3690	1800	1920	873	760	502	360	851
8	586	2310	5330	7160	4950	2750	1700	844	736	496	355	774
9	574	2560	4280	6040	4470	1980	1540	788	844	484	351	2040
10	550	7150	5890	4650	3640	1680	1420	795	830	478	351	4070
11	526	5950	18300	3790	3040	1520	1320	1010	844	478	355	3220
12	514	4480	14300	3210	2600	1390	1230	1040	879	472	400	2280
13	521	5030	16400	2930	2280	1370	1190	2010	879	460	450	1720
14	500	11900	14100	3440	2060	1310	1130	3340	1030	450	400	1440
15	479	8090	11600	3410	2050	1230	1110	3890	1050	445	496	1220
16	467	5820	10700	3130	1840	1170	1110	2940	956	445	466	1070
17	457	4560	7280	2890	1740	1120	1110	2210	886	435	410	1030
18	451	3700	5330	2620	1690	1070	1340	1600	837	430	395	978
19	444	3050	4310	2650	1660	1030	1560	1540	760	430	415	886
20	436	2570	3630	2510	1580	995	1890	1370	730	420	405	858
21	445	2230	3170	3650	1500	965	1980	1240	706	415	390	942
22	444	1960	2810	4190	1420	940	3180	1160	688	410	385	2030
23	582	1840	2500	3330	1370	1060	3270	1110	670	405	390	5780
24	785	2210	2230	2780	1320	1630	2620	1060	646	400	844	4370
25	1630	6010	2000	2440	1460	7210	2170	1020	628	400	1200	2990
26	1710	10400	1830	2210	1400	5030	1850	1190	616	405	802	2150
27	1340	6230	1720	1960	1320	3300	1600	2040	604	435	652	1690
28	1210	5380	1660	1810	1280	2630	1430	2070	586	420	580	1450
29	2490	9140	2030	1710	---	2180	1310	1570	568	400	526	1330
30	5480	5950	1980	1590	---	1870	1230	1350	568	390	490	1230
31	3960	---	1760	1570	---	1670	---	1200	---	385	484	---
TOTAL	31262	155710	208980	96090	72540	55630	51010	45566	23930	14088	14582	53733
MEAN	1008	5190	6741	3100	2591	1795	1700	1470	798	454	470	1791
MAX	5480	11900	18700	7160	6220	7210	3270	3890	1100	556	1200	5780
MIN	436	1840	1660	1550	1280	940	1110	788	568	385	351	718
CFSM	3.37	17.4	22.5	10.4	8.67	6.00	5.69	4.92	2.67	1.52	1.57	5.99
IN.	3.89	19.37	26.00	11.95	9.03	6.92	6.35	5.67	2.98	1.75	1.81	6.69
AC-FT	62010	308900	414500	190600	143900	110300	101200	90380	47470	27940	28920	106600

CAL YR 1977 TOTAL 752471 MEAN 2062 MAX 18700 MIN 267 CFSM 6.90 IN 93.62 AC-FT 1493000
WTR YR 1978 TOTAL 823121 MEAN 2255 MAX 18700 MIN 351 CFSM 7.54 IN 102.41 AC-FT 1633000

12035000 SATSOP RIVER NEAR SATSOP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-71, 1975 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
04...	0920	652	75	6.5	8.2	20	1
NOV							
14...	0935	15300	50	6.9	8.7	130	160
DEC							
05...	0920	5720	60	6.3	6.5	15	7
JAN , 1978							
03...	0930	1640	61	7.2	4.8	15	5
FEB							
14...	0930	2030	59	7.4	6.4	10	1
MAR							
13...	0910	1370	66	6.3	7.0	15	4
APR							
17...	1000	1090	64	7.5	8.4	10	3
MAY							
08...	0945	644	80	7.2	11.7	20	1
JUN							
12...	0940	879	71	7.3	12.4	--	1
JUL							
24...	0945	400	57	7.1	15.2	10	2
AUG							
14...	0935	400	76	7.4	14.2	5	3
SEP							
05...	0945	1140	65	7.5	12.6	15	5

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.7	.17	.02	.01	.00	.00
NOV						
14...	11.4	.48	.15	.59	.01	.03
DEC						
05...	11.8	.45	.04	.04	.00	.00
JAN , 1978						
03...	12.7	.32	.04	.02	.01	.03
FEB						
14...	12.3	.29	.03	.02	.00	.00
MAR						
13...	12.2	.27	.12	.02	.01	.03
APR						
17...	11.7	.16	.03	.01	.00	.00
MAY						
08...	11.5	.14	.09	.01	.00	.00
JUN						
12...	11.1	.09	.03	.01	.01	.03
JUL						
24...	9.1	.13	.03	.01	.01	.03
AUG						
14...	10.2	.13	.08	.02	.01	.03
SEP						
05...	10.6	.24	.05	.01	.01	.03

12035100 CHEHALIS RIVER NEAR MONTESANO, WA

LOCATION.--Lat 46°57'45", long 123°36'12", near center of N½ sec.18, T.17 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, at State Highway 107 bridge, 0.1 mi (0.2 km) upstream from Wynoochee River, 1.3 mi (2.1 km) south of Montesano, and at mile 13.2 (21.2 km).

DRAINAGE AREA.--1,782 mi² (4,615 km²).

PERIOD OF RECORD.--Water years 1970-71, 1977 to current year.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1005	2130	95	6.8	11.0	40	2
NOV							
14...	1005	--	62	7.1	8.9	75	50
DEC							
05...	0955	--	62	6.3	7.4	115	46
JAN , 1978							
03...	1000	--	78	7.1	4.0	35	6
FEB							
14...	1010	--	70	7.4	6.1	25	3
MAR							
13...	0945	--	80	6.9	7.9	35	5
APR							
17...	1030	--	75	7.3	9.7	25	3
MAY							
08...	1015	--	86	7.2	13.5	15	3
JUN							
12...	1015	--	84	7.2	15.8	--	1
JUL							
24...	1015	935	86	7.5	22.4	30	4
AUG							
14...	1010	902	94	7.4	18.2	10	2
SEP							
05...	1015	--	75	7.2	15.5	20	6

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	10.3	.28	.05	.03	.01	.03
NOV						
14...	11.2	.64	.07	.17	.01	.03
DEC						
05...	10.2	.99	.13	.18	.01	.03
JAN , 1978						
03...	12.3	.63	.07	.04	.02	.06
FEB						
14...	11.9	.62	.05	.03	.01	.03
MAR						
13...	11.4	.56	.12	.03	.01	.03
APR						
17...	10.5	.39	.03	.03	.01	.03
MAY						
08...	10.1	.20	.07	.02	.01	.03
JUN						
12...	9.8	.22	.08	.02	.01	.03
JUL						
24...	9.0	.04	.06	.04	.00	.00
AUG						
14...	8.6	.14	.09	.03	.01	.03
SEP						
05...	9.5	.30	.05	.04	.02	.06

12035380 WYNOOCHEE LAKE NEAR GRISDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE¼NW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi (3.2 km) north of Grisdale, at river mile 51.8 (83.3 km).

DRAINAGE AREA.--41.0 mi^3 (106.2 km^2).

PERIOD OF RECORD.- October 1972 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 22, 1973, staff gage on upstream face of dam.

REMARKS.--Reservoir is formed by concrete gravity type dam with gate-type spillway; construction began in 1969; completed in 1972. Usable capacity, 67,288 acre-ft (83.0 hm^3) between elevation 690 ft (210.3 m), sluice invert level, and 800 ft (243.8 m), full pool elevation. Dead storage, 2,117 acre-ft (2.61 hm^3) below elevation 690 ft (210.3 m). Figures given herein represent total contents. Water is used for flood control, water supply and recreation.

COOPERATION.--Daily elevations at 0800, monthend elevations at 2400, and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 69,610 acre-ft (85.8 hm^3/yr), June 11, 1974, elevation, 800.18 ft (243.895 m); minimum observed, 12,210 acre-ft (15.1 hm^3/yr) Oct. 31, 1972, elevation, 725.7 ft (221.19 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 66,361 acre-ft (81.8 hm^3/yr), May 29, elevation, 797.26 ft (243.005 m); minimum observed, 33,361 acre-ft (41.1 hm^3/yr) Dec. 19, elevation, 761.21 ft (232.017 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	777.73	46,889	----
Oct. 31	771.04	41,124	-5,765
Nov. 30	764.97	36,243	-4,881
Dec. 31	763.71	35,266	-977
CAL YR 1977	----	----	-487
Jan. 31	763.26	34,920	-346
Feb. 28	764.13	35,590	+670
Mar. 31	777.91	47,051	+11,461
Apr. 30	789.88	58,541	+11,490
May 31	796.92	65,988	+7,447
June 30	794.15	62,996	-2,992
July 31	787.54	56,180	-6,816
Aug. 31	786.26	54,912	-1,268
Sept. 30	778.66	47,727	-7,185
WTR YR 1978	----	----	+838

12035400 WYNOOCHEE RIVER NEAR GRISDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in NW¼SW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi (0.8 km) downstream from Wynoochee Dam, 1.7 mi (2.7 km) north of Grisdale, 1.7 mi (2.7 km) downstream from Scatter Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--41.3 mi^2 (107.0 km^2).

PERIOD OF RECORD.--October 1965 to current year. Sediment records February 1966 to May 1967.

GAGE.--Water-stage recorder. Altitude of gage is 630 ft (192 m), from topographic map. Prior to Nov. 3, 1967, at site 1,500 ft (457 m) upstream at different datum.

REMARKS.--Records excellent. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--13 years, 548 ft^3/s (15.52 m^3/s), 180.19 in/yr (4,577 mm/yr), 397,000 acre-ft/yr (490 hm^3/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft^3/s (334 m^3/s) Dec. 12, 1966, gage height, about 18.0 ft (5.49 m), computed from graph based on gage readings, site and datum then in use; minimum, 0.9 ft^3/s (0.025 m^3/s) Sept. 10, 12, 1974, gage height, 0.06 ft (0.018 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,070 ft^3/s (172 m^3/s) Nov. 2, gage height, 6.00 ft (1.829 m); minimum, 141 ft^3/s (3.99 m^3/s) Aug. 30, gage height, 1.10 ft (0.335 m), minimum daily, 156 ft^3/s (4.42 m^3/s) May 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	405	3590	1260	396	307	342	218	218	435	218	212	364
2	405	5730	2290	396	315	307	218	218	435	218	212	455
3	330	2560	3190	396	493	242	218	218	430	218	212	455
4	304	1230	1200	400	804	205	218	218	430	218	212	455
5	303	642	876	1400	804	205	221	218	430	218	212	534
6	327	642	876	1550	976	205	221	218	425	218	212	642
7	338	609	1140	1080	1260	328	221	218	342	218	212	570
8	337	576	1320	1090	1730	540	221	189	218	215	212	534
9	335	757	1000	1710	1940	622	221	156	218	212	212	534
10	334	1740	691	1730	1480	615	221	159	218	212	212	540
11	333	1350	2100	985	820	615	221	164	218	212	212	1160
12	333	852	4130	670	804	615	221	171	218	208	212	1560
13	333	860	2330	602	552	615	218	200	218	205	212	1540
14	327	2100	2950	602	391	415	215	218	351	218	212	1080
15	333	2840	3830	602	382	295	200	295	425	218	212	757
16	332	1240	2740	609	355	295	200	420	425	218	212	757
17	330	852	932	656	311	295	178	430	425	218	212	750
18	329	705	932	750	291	295	189	430	425	218	212	750
19	329	522	712	742	291	295	212	430	295	218	212	540
20	329	522	540	742	291	235	212	430	218	218	212	425
21	328	400	396	742	291	200	212	430	218	218	212	420
22	326	328	324	750	324	200	218	430	218	218	212	558
23	328	410	324	750	342	202	218	430	218	218	212	628
24	329	493	324	750	342	205	218	430	218	215	212	628
25	677	1520	324	742	342	212	218	430	218	212	212	750
26	984	2770	324	558	342	212	218	430	218	215	215	828
27	975	1270	299	435	342	212	218	435	218	212	218	804
28	971	1260	287	435	342	215	218	435	218	212	218	656
29	982	1590	471	435	---	215	218	435	218	212	218	558
30	997	1630	471	382	---	215	218	435	218	212	202	534
31	1400	---	396	303	---	218	---	435	---	212	218	---
TOTAL	15023	41590	38979	23390	17264	9887	6438	9973	8979	6672	6589	20766
MEAN	485	1386	1257	755	617	319	215	322	299	215	213	692
MAX	1400	5730	4130	1730	1940	622	221	435	435	218	218	1560
MIN	303	328	287	303	291	200	178	156	218	205	202	364
AC-FT	29800	82490	77310	46390	34240	19610	12770	19780	17810	13230	13070	41190
†	-5,765	-4,881	-977	-346	+670	+11,461	+11,490	+7,447	-2,992	-6,816	-1,268	-7,185
MEAN‡	391	1,305	1,241	749	629	505	408	443	249	104	192	572
CFSM‡	9.47	31.6	30.0	18.1	15.2	12.2	9.88	10.7	6.03	2.52	4.65	13.8
IN.‡	10.91	35.23	34.65	20.90	15.85	14.11	11.01	12.36	6.73	2.91	5.36	15.44
AC-FT‡	24,040	77,610	76,330	46,040	34,910	31,070	24,260	27,230	14,820	6,414	11,800	34,000

CAL YR 1977: TOTAL 185,700 MEAN 509 MAX 5,730 MIN 186 AC-FT 368,300
DO.....: MEAN‡ 508 CFSM‡12.3 IN‡ 166.98 AC-FT‡ 367,800
WTR YR 1978: TOTAL 205,550 MEAN 563 MAX 5,730 MIN 156 AC-FT 407,700
DO.....: MEAN‡ 564 CFSM‡13.7 IN‡ 185.46 AC-FT‡ 408,500

† Change in contents, in acre-feet, in Wynoochee Lake.
‡ Adjusted for change in reservoir contents.

12035450 BIG CREEK NEAR GRISDALE, WA

LOCATION.--Lat 47°22'28", long 123°38'08", in SE¼SE¼ sec.24, T.22 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on left bank 280 ft (85 m) upstream from road bridge, 1.5 mi (2.4 km) northwest of Grisdale, and 0.6 mi (1.0 km) upstream from mouth.

DRAINAGE AREA.--9.57 mi² (24.79 km²).

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Records excellent, except those for period July 1 to Aug. 22, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--6 years, 118 ft³/s (3.34 m³/s), 167.44 in/yr (4,253 mm/yr), 85,490 acre-ft/yr (105 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s (78.2 m³/s) Dec. 26, 1975, gage height, 8.89 ft (2.710 m), from rating curve extended above 1,500 ft³/s (42.5 m³/s); minimum, 9.9 ft³/s (0.28 m³/s) part or all of each day Aug. 15-23, 1977.

EXTREMES FOR CURRENT YEAR.-- Peak discharges above base of 1,100 ft³/s (31.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³.s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1700	*1,730	49.0	*7.46	2.274	Dec. 2	0700	1,400	39.6	6.92	2.109
Nov. 14	0400	1,590	45.0	7.24	2.207	Dec. 10	2100	1,230	34.8	6.58	2.006
Nov. 25	1600	1,180	33.4	6.47	1.972						

Minimum discharge, 11 ft³/s (0.31 m³/s) part or all of each day Aug. 6-11; minimum gage height, 3.04 ft (0.927 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	1010	424	79	121	57	66	49	57	25	12	147
2	40	412	915	73	244	55	63	48	53	24	12	147
3	38	165	408	162	295	53	88	44	49	24	12	99
4	36	113	274	295	172	50	102	43	47	23	12	131
5	35	88	197	280	139	49	141	41	44	22	12	90
6	35	101	361	192	180	50	125	38	42	22	11	69
7	33	117	280	361	351	217	99	37	39	21	11	57
8	32	79	167	637	347	153	83	36	37	20	11	65
9	31	238	133	302	268	102	73	34	39	20	11	295
10	29	476	583	205	182	84	65	37	37	19	11	312
11	27	223	641	165	145	74	60	53	41	19	15	187
12	27	182	587	139	123	66	55	57	41	18	26	121
13	27	265	682	131	108	69	52	175	63	18	19	97
14	26	776	650	162	108	65	49	354	83	17	19	81
15	25	250	452	147	106	60	48	229	66	17	36	71
16	24	182	320	131	97	57	49	133	55	16	23	63
17	24	141	220	125	88	55	66	99	48	16	19	59
18	23	106	172	113	86	52	88	81	44	16	18	55
19	22	84	143	121	84	50	99	69	41	15	18	49
20	21	69	125	119	79	48	121	62	38	15	17	47
21	22	59	110	283	73	47	137	56	37	14	16	59
22	22	52	99	238	68	45	182	53	35	14	16	131
23	87	52	90	155	65	65	141	50	34	13	30	157
24	147	56	81	127	62	192	108	48	33	14	141	115
25	142	556	76	113	65	605	90	49	30	14	83	88
26	121	337	69	102	65	195	76	104	29	15	76	74
27	89	226	65	92	63	127	68	195	28	15	52	68
28	172	277	77	84	60	110	62	125	27	14	44	62
29	353	492	133	77	---	92	56	88	27	13	37	63
30	573	175	102	73	---	79	53	73	26	13	34	60
31	228	---	88	71	---	71	---	63	---	12	35	---
TOTAL	2555	7359	8724	5354	3844	3094	2565	2623	1270	538	889	3119
MEAN	82.4	245	281	173	137	99.8	85.5	84.6	42.3	17.4	28.7	104
MAX	573	1010	915	637	351	605	182	354	83	25	141	312
MIN	21	52	65	71	60	45	48	34	26	12	11	47
CFSM	8.61	25.6	29.4	18.1	14.3	10.4	8.93	8.84	4.42	1.82	3.00	10.9
IN.	9.93	28.60	33.91	20.81	14.94	12.03	9.97	10.19	4.94	2.09	3.46	12.12
AC-FT	5070	14600	17300	10620	7620	6140	5090	5200	2520	1070	1760	6190

WTR YR 1978 TOTAL 41934 MEAN 115 MAX 1010 MIN 11 CFSM 12.0 IN 162.98 AC-FT 83180
CAL YR 1977 TOTAL 39918.3 MEAN 109 MAX 1010 MIN 9.9 CFSM 11.4 IN 155.15 AC-FT 79180

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE¼NE¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi (1.3 km) upstream from Save Creek, 2.5 mi (4.0 km) downstream from Oxbow Dam site, 11.0 mi (17.7 km) downstream from Wynoochee Dam, 23.5 mi (37.8 km) northeast of city hall in Aberdeen, and at mile 40.6 (65.3 km).

DRAINAGE AREA.--74.1 mi^{2} (191.9 km^{2}).

PERIOD OF RECORD.--May 1925 to current year. Published as "at Oxbow, near Aberdeen" 1925-52, where drainage area was 70.7 mi^{2} (183.1 km^{2}). Records published for both sites October 1951 to October 1952.

REVISED RECORDS.--WSP 1346: 1952. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401 ft (122.2 m) National Geodetic Vertical Datum of 1929, stadia traverse. Prior to Nov. 7, 1925, nonrecording gage at site 2.3 mi (3.7 km) upstream at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1.5 mi (2.4 km) upstream at datum 444.0 ft (135.33 m) National Geodetic Vertical Datum of 1929 (levels by city of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at site 2.5 mi (4.0 km) upstream at datum about 91 ft (27.7 m) higher. Oct. 5, 1951 to Sept. 30, 1976, water-stage recorder on left bank at same site and datum.

REMARKS.--Records excellent. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--53 years, 826 ft^{3}/s (23.39 m^{3}/s), 151.38 in/yr (3,845 mm/yr), 598,400 acre-ft/yr (738 hm^{3}/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft^{3}/s (668 m^{3}/s) Dec. 9, 1956, gage height, 16.95 ft (5.166 m), from rating curve extended above 9,000 ft^{3}/s (255 m^{3}/s); minimum, 57 ft^{3}/s (1.61 m^{3}/s) Sept. 3, 4, 5, 1972, gage height, 4.43 ft (1.350 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,470 ft^{3}/s (240 m^{3}/s) Nov. 1, gage height, 10.81 ft (3.295 m); minimum, 232 ft^{3}/s (6[illegible] m^{3}/s) Aug. 30, gage height, 4.94 ft (1.506 m); minimum daily discharge, 285 ft^{3}/s (8.07 m^{3}/s) Aug. 7-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	528	5500	2530	646	723	524	446	400	618	325	295	660
2	520	6770	4870	632	996	494	446	390	604	325	295	832
3	451	3290	4740	832	1230	428	500	385	590	325	290	723
4	405	1770	2090	1130	1350	375	512	380	584	320	290	786
5	400	996	1510	1920	1260	370	625	370	578	320	290	751
6	419	1020	1410	2180	1440	380	597	365	572	315	290	824
7	435	1060	1910	1850	2050	779	530	360	500	315	285	737
8	433	920	1870	2460	2530	912	494	340	370	315	285	716
9	428	1370	1560	2400	2590	888	464	295	405	315	285	1140
10	422	2930	2090	2380	2070	840	446	310	365	310	285	1220
11	419	2140	3580	1560	1270	816	428	375	390	310	285	1510
12	421	1490	5680	1110	1190	793	416	370	370	300	320	1820
13	420	1670	4170	1010	928	808	410	646	390	295	305	1760
14	409	3890	4470	1080	737	639	400	1000	524	310	295	1370
15	414	3840	4800	1030	723	482	385	888	632	305	360	944
16	411	2070	4090	996	653	470	380	816	604	305	310	920
17	408	1450	1700	996	597	464	405	730	584	305	295	904
18	407	1190	1550	1080	566	452	440	688	578	305	300	896
19	403	920	1270	1090	554	446	512	653	395	305	300	723
20	402	864	987	1080	542	400	560	632	390	305	300	572
21	405	744	824	1400	524	350	597	618	360	300	300	604
22	402	618	681	1350	536	345	779	611	350	300	295	848
23	533	688	646	1190	554	395	674	597	350	300	325	1070
24	624	786	618	1100	548	604	572	590	345	300	560	960
25	944	2630	590	950	554	1520	518	604	340	300	446	978
26	1280	3770	578	850	548	793	482	723	340	305	405	1030
27	1200	2150	548	716	536	632	458	912	335	305	365	996
28	1340	2110	554	695	530	572	434	779	335	300	350	864
29	1670	2910	793	674	---	524	422	695	330	295	335	758
30	2160	2380	800	632	---	488	410	660	330	295	310	730
31	1840	---	674	542	---	464	---	632	---	295	335	---
TOTAL	20953	63936	64583	37561	28329	18447	14742	17814	13458	9525	9986	28646
MEAN	676	2131	2083	1212	1012	595	491	575	449	307	322	955
MAX	2160	6770	5680	2460	2590	1520	779	1000	632	325	560	1820
MIN	400	618	548	542	524	345	380	295	330	295	285	572
AC-FT	41560	126800	128100	74500	56190	36590	29240	35330	26690	18890	19810	56820
†	-5,765	-4,881	-977	-346	+670	+11,461	+11,490	+7,447	-2,992	-6,816	-1,268	-7,185
MEAN‡	582	2,049	2,067	1,206	1,024	781	685	696	398	196	301	834
CFSM‡	7.85	27.7	27.9	16.3	13.8	10.5	9.24	9.39	5.37	2.65	4.06	11.3
IN.‡	9.06	30.84	32.16	18.76	14.39	12.16	10.30	10.82	6.00	3.05	4.69	12.56
AC-FT‡	35,800	121,900	127,100	74,150	56,860	48,050	40,730	42,780	23,700	12,070	18,540	49,640

CAL YR 1977: TOTAL 303,966 MEAN 833 MAX 6,770 MIN 270 AC-FT 602,900
DO.....: MEAN‡ 832 CFSM‡ 11.2 IN‡ 152.40 AC-FT‡ 602,380
WTR YR 1978: TOTAL 327,980 MEAN 899 MAX 6,770 MIN 285 AC-FT 650,500
DO.....: MEAN‡ 900 CFSM‡ 12.1 IN‡ 164.79 AC-FT‡ 651,320

† Change in contents, in acre-feet, in Wynoochee Lake, furnished by Corps of Engineers.
‡ Adjusted for change in contents in Wynoochee Lake.

12036650 ANDERSON CREEK NEAR MONTESANO, WA

LOCATION.--Lat 47°07'02", long 123°39'17", in SE¼NE¼ sec.22, T.19 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 70 ft (21 m) upstream from Wynoochee Valley road bridge, 3.1 mi (5.0 km) upstream from Helm Creek, 9.6 mi (15.4 km) northwest of Montesano, and 1 mi (1.6 km) upstream from mouth.

DRAINAGE AREA.--2.72 mi² (7.04 km²).

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 150 ft (46 m), from topographic map.

REMARKS.--Records good except those above 100 ft³/s (2.83 m³/s) which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--6 years, 14.4 ft³/s (0.408 m³/s), 71.89 in/yr (1,826 mm/yr), 10,430 acre-ft/yr (12.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 299 ft³/s (8.47 m³/s) Dec. 26, 1975, gage height, 8.46 ft (2.579 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1730	211	5.98	7.02	2.140	Dec. 2	0645	*289	8.18	*8.01	2.441
Nov. 14	0800	168	4.76	6.30	1.920	Dec. 10	1945	213	6.03	6.99	2.131
Nov. 25	1630	127	3.60	5.61	1.710	Dec. 13	0315	155	4.39	6.02	1.835

Minimum discharge, no flow all or part of Aug. 8-12.

REVISIONS.--Peak discharges and annual maximum (*) for water year 1976-77 and revised daily discharges, for high-water periods in these years, are given below. These figures supersede those published in reports indicated.

Water year	Date	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Water year	Date	Discharge (ft³/s)	Discharge (m)	Gage height (ft)	Gage height (m)
1976	Jan. 15, 1976	219	6.20	7.15	2.179	1976	Mar. 24, 1976	197	5.58	6.79	2.070
1976	Feb. 17, 1976	147	4.16	5.95	1.814	1977	Mar. 7, 1977	*146	4.13	*5.93	1.807

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
Jan. 14, 1976	72	Jan. 27, 1976	62	Mar. 24, 1976	137	Dec. 26, 1976	66	Mar. 7, 1977	94
15	209	Feb. 16	66	25	67	Jan. 17, 1977	59	8	97
16	100	17	96	26	50	18	77	9	76
17	48	18	65	27	46	19	47	10	43

Month	Total	Mean	Maximum	Cfsm	in.	Ac-ft
January 1976	1,108.0	35.7	209	13.1	15.15	2,200
February 1976	748.7	25.8	96	9.49	10.24	1,490
March 1976	752.6	24.3	137	8.93	10.29	1,490
December 1976	396.6	12.8	66	4.71	5.42	787
January 1977	458.2	14.8	77	5.44	6.26	909
March 1977	830	26.8	97	9.85	11.35	1,650
WTR YR 1976	6,169.88	16.9	209	6.21	84.3	12,240
CAL YR 1976	3,738.13	10.2	209	3.75	51.10	7,410
WTR YR 1977	3,139.74	8.60	97	3.16	42.92	6,230

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	129	61	7.6	19	7.0	7.3	6.2	7.0	1.7	.30	8.1
2	5.0	68	197	7.3	40	6.5	6.5	5.6	5.9	1.5	.30	7.3
3	4.5	32	70	13	39	6.2	6.5	5.1	5.1	1.6	.23	5.5
4	4.3	21	51	23	31	5.9	5.4	4.8	4.6	1.5	.17	6.2
5	3.8	16	38	29	24	5.4	10	4.3	3.8	1.4	.12	5.1
6	3.8	14	57	26	21	5.4	11	3.8	3.4	1.3	.08	5.5
7	3.8	16	52	31	26	15	10	3.4	3.2	1.2	.05	5.1
8	3.3	13	39	48	30	15	9.3	3.2	2.8	1.2	.04	6.5
9	3.3	18	30	44	31	13	8.3	3.2	4.6	1.2	.00	24
10	2.8	64	86	33	27	12	7.6	4.3	3.8	1.2	.00	34
11	2.2	44	114	27	24	10	7.3	6.8	4.6	1.2	.00	22
12	2.2	29	84	24	19	9.3	6.5	6.2	4.1	1.2	.25	15
13	2.4	26	111	24	16	9.3	5.9	19	5.6	1.1	.64	12
14	2.2	126	59	31	14	8.3	5.6	26	5.6	1.0	.55	9.0
15	2.1	62	58	31	12	7.3	5.6	32	4.8	1.0	2.0	7.3
16	2.1	41	46	28	11	6.8	5.6	28	4.3	1.1	.74	6.2
17	2.1	31	36	24	10	6.2	6.2	22	3.8	1.1	.64	5.5
18	2.0	24	29	21	9.6	5.6	7.0	16	3.6	1.0	.55	4.8
19	2.0	19	24	21	9.6	5.1	11	13	3.2	.90	.84	4.2
20	2.0	15	20	19	9.0	4.8	13	10	2.8	.80	.74	4.5
21	2.2	13	17	28	8.6	4.6	14	8.3	2.6	.74	.64	6.5
22	2.1	11	14	31	7.9	4.3	31	7.9	2.8	.64	.55	18
23	6.6	12	12	27	7.6	5.9	29	7.0	2.6	.55	.74	31
24	9.4	13	10	23	7.3	15	22	6.2	2.3	.55	3.4	26
25	11	68	9.0	19	9.3	70	17	6.2	2.2	.55	2.2	22
26	10	62	7.9	16	7.9	44	14	9.3	2.2	.64	1.3	18
27	8.7	46	7.0	13	7.6	27	11	14	1.9	.74	.84	15
28	11	42	7.6	12	7.6	19	9.3	13	1.7	.64	.84	12
29	18	55	9.0	11	---	14	7.9	11	1.7	.55	.74	11
30	40	36	8.6	9.3	---	11	7.3	9.6	1.8	.38	.64	9.5
31	32	---	7.9	9.3	---	8.6	---	8.3	---	.38	.96	---
TOTAL	212.7	1166	1372.0	710.5	486.0	387.5	318.1	323.7	108.4	30.56	21.09	366.8
MEAN	6.86	38.9	44.3	22.9	17.4	12.5	10.6	10.4	3.61	.99	.68	12.2
MAX	40	129	197	48	40	70	31	32	7.0	1.7	3.4	34
MIN	2.0	11	7.0	7.3	7.3	4.3	5.4	3.2	1.7	.38	.00	4.2
CFSM	2.52	14.3	16.3	8.42	6.40	4.60	3.90	3.82	1.33	.36	.25	4.49
IN.	2.91	15.94	18.76	9.71	6.64	5.30	4.35	4.43	1.48	.42	.29	5.01
AC-FT	422	2310	2720	1410	964	769	631	642	215	61	42	728

CAL YR 1977 TOTAL 5248.49 MEAN 14.4 MAX 197 MIN .00 CFSM 5.29 IN 71.75 AC-FT 10410
WTR YR 1978 TOTAL 5503.35 MEAN 15.1 MAX 197 MIN .00 CFSM 5.55 IN 75.24 AC-FT 10920

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE¼SE¼ sec.27, T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft (610 m) upstream from Black Creek, 3.5 mi (5.6 km) northwest of Montesano, and at mile 5.9 (9.5 km).

DRAINAGE AREA.--155 mi² (401 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Water-discharge records excellent. City of Aberdeen diverted about 111 ft³/s (3.14 m³/s) for municipal supply at intake 2.2 mi (3.5 km) upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi (73.5 km) upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction.

AVERAGE DISCHARGE.--22 years, 1,313 ft³/s (37.18 m³/s) 951,300 acre-ft/yr (1,170 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft³/s (722 m³/s) Jan. 19, 1968; maximum gage height, 20.54 ft (6.261 m) Dec. 10, 1956; minimum discharge, 3.0 ft³/s (0.085 m³/s) part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft (0.872 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,900 ft³/s (252 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0200	13,000	368	13.91	4.240	Dec. 13	0500	11,400	323	12.90	3.932
Dec. 2	1400	*14,700	416	*15.08	4.596						

Minimum discharge, 182 ft³/s (5.15 m³/s) Aug. 9, gage height, 3.02 ft (0.920 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	614	6490	4400	868	1100	652	712	530	760	298	206	480
2	578	10600	11800	832	1940	622	718	510	724	285	206	1060
3	548	6280	9060	1030	2260	575	736	485	688	289	203	876
4	450	3450	4760	1700	2170	505	778	475	664	294	199	940
5	425	1870	3060	2150	1900	465	862	450	640	289	196	858
6	420	1610	3650	3110	1890	455	943	430	616	281	192	901
7	455	1920	3690	2480	2610	838	838	415	598	277	192	871
8	440	1560	3310	3870	3410	1280	754	400	485	265	189	793
9	435	1630	2860	3410	3570	1190	694	355	480	261	185	1320
10	460	4920	3350	3450	3150	1100	634	345	455	257	189	1960
11	440	4400	7350	2480	2020	1030	598	470	470	281	192	1790
12	405	2860	8750	1810	1730	985	565	470	455	273	241	2260
13	410	2940	9270	1590	1530	1010	545	838	510	245	249	2170
14	390	6210	7860	1800	1140	936	535	1440	610	231	220	1970
15	380	6580	7210	1740	1110	670	520	1680	760	238	325	1280
16	380	4110	7410	1630	985	604	510	1410	712	242	269	1140
17	380	2640	3570	1500	908	570	525	1190	670	238	232	1110
18	376	2170	2790	1530	844	550	575	1030	640	234	223	1050
19	372	1600	2340	1560	820	540	682	929	610	228	240	988
20	364	1360	1780	1490	778	520	808	850	450	224	225	741
21	372	1200	1530	1970	742	455	856	796	395	228	222	758
22	368	954	1220	2110	712	420	1410	766	385	224	219	1190
23	520	902	1100	1820	730	470	1410	748	370	217	227	2420
24	626	1180	999	1610	712	700	1130	724	355	214	482	1970
25	980	3170	922	1500	772	2930	936	712	340	210	554	1560
26	1530	6600	850	1370	724	2180	796	844	335	217	422	1490
27	1490	4380	820	1080	694	1460	712	1200	321	245	363	1370
28	1500	3540	790	992	676	1180	646	1220	312	231	320	1240
29	2050	5320	992	936	---	1010	592	992	303	217	290	1070
30	3350	4220	1150	880	---	868	565	887	307	210	265	983
31	2810	---	936	802	---	772	---	820	---	206	255	---
TOTAL	24318	106666	119579	55100	41627	27542	22585	24411	15420	7649	7992	38609
MEAN	784	3556	3857	1777	1487	888	753	787	514	247	258	1287
MAX	3350	10600	11800	3870	3570	2930	1410	1680	760	298	554	2420
MIN	364	902	790	802	676	420	510	345	303	206	185	480
AC-FT	48230	211600	237200	109300	82570	54630	44800	48420	30590	15170	15850	76580

CAL YR 1977 TOTAL 464697 MEAN 1273 MAX 11800 MIN 157 AC-FT 921700
WTR YR 1978 TOTAL 491498 MEAN 1347 MAX 11800 MIN 185 AC-FT 974900

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-65, 1970 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Interruptions in the record were due to malfunction of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C Aug. 10, 1971; minimum, 1.0°C Jan. 9, 10, 1973, Jan. 7-9, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 22.5 °C July 22, Aug. 8; minimum, 4.5°C Jan. 1, 2, 3, Feb. 12.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	12.0	13.0	10.5	10.0	10.0	8.5	8.0	8.0	5.5	4.5	5.0
2	13.0	11.5	12.0	10.5	10.0	10.0	9.0	8.5	9.0	4.5	4.5	4.5
3	12.0	11.5	12.0	10.0	10.0	10.0	9.0	8.5	9.0	5.5	4.5	5.0
4	11.5	11.0	11.0	10.0	10.0	10.0	8.5	8.5	8.5	6.0	5.5	5.5
5	11.5	10.5	11.0	10.0	10.0	10.0	8.5	8.0	8.0	6.0	6.0	6.0
6	11.0	11.0	11.0	10.0	9.5	10.0	8.5	8.0	8.0	6.0	5.5	5.5
7	12.0	11.0	11.5	9.5	9.5	9.5	8.5	7.0	8.0	5.5	5.5	5.5
8	12.0	11.5	12.0	9.5	8.5	9.0	7.0	7.0	7.0	6.0	5.5	6.0
9	11.5	11.0	11.0	9.0	8.5	9.0	7.0	7.0	7.0	6.0	6.0	6.0
10	11.5	11.0	11.0	9.5	9.0	9.0	8.0	7.0	8.0	6.0	6.0	6.0
11	11.5	11.0	11.0	9.5	9.5	9.5	8.5	8.0	8.0	6.0	6.0	6.0
12	11.5	11.0	11.0	9.5	9.5	9.5	8.5	8.0	8.0	6.0	6.0	6.0
13	11.5	11.0	11.0	9.5	9.5	9.5	8.5	8.0	8.0	6.0	6.0	6.0
14	11.5	10.5	11.0	9.5	9.5	9.5	8.5	8.5	8.5	6.5	6.0	6.5
15	11.5	11.0	11.0	9.5	9.0	9.0	8.5	8.0	8.0	7.0	6.5	6.5
16	11.5	11.0	11.0	9.0	9.0	9.0	8.0	7.0	8.0	7.0	7.0	7.0
17	11.5	10.5	11.0	9.0	8.5	9.0	7.0	7.0	7.0	7.0	7.0	7.0
18	11.0	11.0	11.0	8.5	8.5	8.5	7.0	7.0	7.0	7.0	7.0	7.0
19	11.5	11.0	11.0	8.5	7.0	8.0	7.0	6.5	6.5	7.0	7.0	7.0
20	11.5	11.0	11.0	7.0	6.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0
21	11.5	11.0	11.0	6.0	5.5	5.5	6.5	6.5	6.5	7.0	7.0	7.0
22	11.5	11.0	11.0	5.5	5.5	5.5	6.5	6.5	6.5	7.0	6.5	6.5
23	12.0	11.5	12.0	6.0	5.5	5.5	6.5	6.5	6.5	6.5	6.0	6.0
24	12.0	11.5	12.0	7.0	6.0	6.5	6.5	6.5	6.5	6.0	6.0	6.0
25	11.5	11.0	11.0	8.0	7.0	8.0	6.5	6.5	6.5	6.0	6.0	6.0
26	11.0	10.5	11.0	8.0	8.0	8.0	6.5	6.0	6.5	6.0	6.0	6.0
27	10.5	10.0	10.0	8.0	8.0	8.0	6.0	5.5	5.5	6.0	6.0	6.0
28	10.0	10.0	10.0	8.0	8.0	8.0	6.0	5.5	5.5	6.5	6.0	6.5
29	10.0	10.0	10.0	8.0	8.0	8.0	6.0	5.5	5.5	6.5	6.5	6.5
30	10.0	10.0	10.0	8.0	8.0	8.0	6.0	6.0	6.0	6.5	6.0	6.0
31	10.0	10.0	10.0	---	---	---	6.0	5.5	5.5	6.5	6.0	6.0
MONTH	13.5	10.0	11.0	10.5	5.5	8.5	9.0	5.5	7.0	7.0	4.5	6.0

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.5	6.5	7.5	5.5	6.5	9.5	8.5	9.0	12.5	9.5	11.0
2	7.0	6.0	6.5	6.0	5.0	5.5	10.0	8.0	9.0	13.5	11.0	12.0
3	7.5	7.0	7.0	5.5	5.0	5.0	10.0	8.5	9.0	12.5	9.5	11.0
4	7.5	7.0	7.0	7.5	5.5	6.5	11.0	8.5	9.5	11.5	9.5	10.5
5	7.5	7.0	7.0	8.5	6.5	7.5	10.5	8.5	9.0	13.5	9.0	11.0
6	7.5	7.0	7.0	7.5	7.0	7.0	9.5	7.0	8.5	15.5	10.0	12.0
7	7.0	7.0	7.0	8.0	7.0	7.5	10.5	7.5	9.0	15.5	10.5	12.5
8	7.0	6.5	6.5	8.5	7.0	7.5	11.5	8.5	10.0	15.0	11.5	13.0
9	6.5	6.0	6.5	8.0	6.5	7.0	12.0	8.5	10.0	14.0	12.0	13.0
10	6.0	5.5	6.0	8.0	6.0	7.0	12.5	9.5	11.0	12.5	10.5	11.5
11	6.5	5.5	5.5	8.0	6.5	7.0	11.5	9.0	10.0	13.0	10.0	11.5
12	5.5	4.5	5.0	7.0	6.0	6.5	11.0	8.0	9.5	11.5	11.0	11.0
13	6.5	5.5	6.0	8.0	6.5	7.0	10.5	8.5	9.5	11.0	10.0	10.5
14	6.5	6.0	6.0	8.0	5.5	6.5	9.5	8.5	9.0	10.5	9.5	10.0
15	6.5	5.0	5.5	8.0	6.0	7.0	9.0	8.0	8.5	11.0	9.0	10.0
16	6.0	5.0	5.5	9.5	6.5	8.0	10.5	8.0	9.0	11.0	9.0	10.0
17	6.5	6.0	6.5	10.5	7.5	9.0	9.0	8.0	8.5	12.0	10.0	11.0
18	7.0	6.5	7.0	10.5	8.0	9.0	9.5	8.0	9.0	14.0	10.0	12.0
19	8.0	7.0	7.5	10.5	8.0	9.5	9.5	8.5	9.0	15.5	11.5	13.0
20	7.5	7.0	7.5	11.0	8.0	9.5	10.5	8.0	9.0	16.5	12.5	14.0
21	9.0	7.5	8.0	12.0	8.5	10.0	9.0	8.0	8.5	14.0	12.0	13.0
22	8.0	7.5	8.0	10.5	9.0	9.5	9.0	7.5	8.0	13.0	10.5	11.5
23	9.5	8.0	8.5	10.0	9.0	9.5	10.5	7.5	9.0	11.0	10.0	10.5
24	8.0	7.0	7.5	9.5	8.5	9.0	11.5	9.0	10.0	13.0	10.0	11.5
25	7.5	6.5	7.0	8.5	8.0	8.0	11.5	9.5	10.5	11.5	10.5	11.0
26	8.0	7.0	7.5	9.0	8.0	8.5	11.0	10.0	10.5	10.5	10.0	10.5
27	8.0	7.0	7.5	9.0	8.5	8.5	12.0	10.0	10.5	11.0	10.0	10.5
28	8.0	6.5	7.0	9.5	8.5	9.0	12.5	10.0	11.0	11.5	10.0	10.5
29	---	---	---	10.0	8.5	9.5	12.5	9.0	11.0	12.5	9.5	11.0
30	---	---	---	11.5	9.0	10.0	11.5	10.0	11.0	14.0	10.5	12.0
31	---	---	---	11.0	8.0	9.5	---	---	---	15.0	12.5	14.0
MONTH	9.5	4.5	7.0	12.0	5.0	8.0	12.5	7.0	9.5	16.5	9.0	11.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.5	12.5	14.5	19.0	14.0	16.5	---	---	---	16.0	15.0	15.0
2	17.5	13.5	15.5	17.0	15.5	16.0	---	---	---	15.0	13.5	14.5
3	17.5	14.0	16.0	16.0	14.5	15.0	---	---	---	14.0	13.0	13.5
4	19.0	14.5	16.5	15.0	14.0	14.5	---	---	---	14.0	13.0	13.5
5	19.0	15.5	17.0	18.0	14.0	16.0	---	---	---	15.0	12.5	13.5
6	18.5	15.5	17.0	19.0	15.5	17.0	---	---	---	14.0	13.0	13.5
7	18.0	15.5	16.5	17.0	15.5	16.5	---	---	---	14.5	12.5	13.0
8	18.0	14.0	16.0	18.0	15.0	16.0	22.5	18.0	20.0	13.0	12.0	12.5
9	16.5	14.0	15.5	17.0	15.5	16.0	21.0	18.0	19.5	13.0	12.0	12.5
10	15.0	13.0	14.0	16.5	14.0	15.0	19.0	17.5	18.0	14.0	12.0	12.5
11	15.5	13.0	14.5	16.5	14.0	15.0	18.0	16.0	17.0	13.5	12.0	12.5
12	15.0	13.0	14.0	19.0	14.0	16.5	17.5	15.0	16.0	12.5	10.5	11.5
13	14.0	12.5	13.5	19.5	16.0	17.5	19.5	15.5	17.5	11.5	10.5	11.0
14	14.5	12.5	13.5	19.5	16.0	18.0	17.0	16.0	16.5	12.5	10.5	11.5
15	15.0	12.0	13.5	18.5	16.5	17.5	18.0	15.5	16.5	13.5	11.5	12.5
16	14.5	12.5	13.0	17.0	15.5	16.0	18.0	15.5	16.5	12.5	11.0	11.5
17	17.5	12.5	15.0	16.5	14.5	15.5	16.0	14.5	15.5	11.5	10.0	11.0
18	17.5	14.5	16.0	18.0	14.5	16.0	16.0	15.0	15.5	12.5	10.5	11.5
19	18.0	14.5	16.0	20.5	15.5	18.0	16.5	14.5	15.5	13.0	11.0	12.0
20	19.0	14.5	16.5	21.5	16.5	19.0	16.5	15.0	15.5	12.5	11.5	12.0
21	16.5	15.0	15.5	22.0	17.0	19.5	17.5	15.5	16.5	12.0	11.5	11.5
22	14.5	13.5	14.0	22.5	17.5	20.0	17.0	15.0	16.0	12.0	11.5	11.5
23	16.5	13.0	14.5	20.0	18.0	18.5	15.5	15.0	15.5	12.0	11.5	11.5
24	17.5	13.5	15.5	19.5	16.5	18.0	16.0	14.5	15.5	13.0	11.5	12.5
25	16.0	14.5	15.0	21.5	16.0	19.0	16.0	14.0	15.0	13.5	12.0	13.0
26	18.5	13.5	16.0	---	---	---	18.0	14.0	16.0	13.0	12.0	12.5
27	20.0	14.5	17.5	---	---	---	16.5	15.0	16.0	13.5	12.0	12.5
28	21.0	16.0	18.5	---	---	---	19.0	15.0	17.0	13.0	12.0	12.0
29	18.5	16.0	17.0	---	---	---	19.5	16.0	17.5	14.0	12.0	13.0
30	17.0	15.0	15.5	---	---	---	18.0	16.5	17.0	14.0	13.0	13.5
31	---	---	---	---	---	---	16.5	15.5	16.0	---	---	---
MONTH	21.0	12.0	15.5	22.5	14.0	17.0	22.5	14.0	16.5	16.0	10.0	12.5
YEAR	22.5	4.5	10.5									

12039000 HUMPTULIPS RIVER NEAR HUMPTULIPS, WA

LOCATION.--Lat 47°13'42", long 123°56'23", in NE¼NE¼ sec.17, T.20 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100105, on right bank 1.0 mi (1.6 km) southeast of Humptulips, 2.3 mi (3.7 km) upstream from Stevens Creek, 3.3 mi (5.3 km) downstream from confluence of East and West Forks, and at mile 24.8 (39.9 km).

DRAINAGE AREA.--130 mi^2 (337 km^2).

PERIOD OF RECORD.-- May 1933 to January 1935, July 1942 to current year. Water temperatures November 1969 to October 1970.

REVISED RECORDS.--WSP 1216: 1934-35, 1943-46, 1947(M), 1949(M). WSP 1246: Drainage area. WSP 1396: 1946(M), 1954(P). WSP 1932: 1960(P).

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (37 m), from topographic map. Prior to Jan. 14, 1935, and Mar. 1, 1950, to Jan. 16, 1953, water-stage recorder and July 1, 1942, to Feb. 28, 1950, and Jan. 17, 1953, to Sept. 30, 1959, nonrecording gage; all at sites 400 ft (122 m) downstream at different datums.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--37 years (water years 1934, 1943-78), 1,347 ft^3/s (38.15 m^3/s), 140.71 in/yr (3,574 mm/yr), 975,900 acre-ft/yr (1,200 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft^3/s (935 m^3/s) Jan. 22, 1935, gage height, 12.7 ft (3.87 m), datum then in use, from flood marks, from rating curve extended above 16,500 ft^3/s (467 m^3/s); maximum gage height, 13.03 ft (3.972 m) Jan. 19, 1968; minimum discharge observed, 82 ft^3/s (2.32 m^3/s) Sept. 11, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft^3/s (283 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	17,400	493	10.35	3.155	Dec. 2	1000	*21,500	609	*11.48	3.499
Nov. 14	0800	13,400	379	9.13	2.783	Dec. 11	0300	10,100	286	8.02	2.444

Minimum discharge, 155 ft^3/s (4.39 m^3/s) Aug. 10, gage height, 0.80 ft (0.244 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	510	9600	5660	874	1230	620	916	657	741	317	180	1170
2	468	7410	15200	804	2150	590	916	620	678	305	177	1960
3	432	3270	7570	1120	2800	560	986	590	626	301	175	1290
4	408	2140	4520	2560	2020	542	1100	578	590	293	170	1450
5	380	1660	3050	2680	1630	518	1460	536	554	289	167	1170
6	370	1570	3520	2140	1960	506	1400	500	518	281	165	1020
7	370	2210	3570	2320	3780	1680	1160	476	488	273	165	853
8	355	1540	2510	4660	3850	1780	1020	455	460	269	162	811
9	355	2430	1930	3040	2960	1150	909	445	530	261	157	2400
10	325	5990	3810	2190	2170	946	839	460	500	265	160	3430
11	305	3590	7910	1750	1710	839	790	776	530	261	170	2430
12	305	2810	6320	1480	1430	755	720	727	554	253	317	1670
13	330	3190	7010	1340	1230	797	685	1590	671	241	309	1330
14	295	8350	6710	1630	1170	741	657	2960	1050	234	242	1110
15	281	4310	5360	1550	1180	685	671	2430	888	231	678	970
16	272	3130	4440	1420	1030	638	685	1660	727	231	400	867
17	258	2370	3110	1390	962	608	818	1250	626	224	297	818
18	249	1850	2350	1230	930	578	1040	1060	566	220	269	734
19	241	1510	1900	1240	930	548	1100	923	518	217	305	664
20	233	1270	1580	1170	888	518	1330	825	482	213	273	626
21	245	1100	1370	2170	839	494	1430	748	455	210	265	664
22	245	986	1210	2230	783	476	2010	706	440	204	241	1200
23	759	938	1100	1660	748	650	1720	650	420	201	249	1790
24	1070	1070	1020	1360	706	1360	1370	614	400	195	1610	1420
25	1370	4430	909	1210	755	5450	1160	626	385	192	1420	1140
26	1160	5140	846	1130	734	2770	1030	978	370	198	1200	970
27	914	3550	783	1010	692	1870	923	1870	356	234	832	916
28	1290	3590	790	930	657	1590	839	1550	343	204	657	846
29	3080	6630	1300	860	---	1290	762	1120	329	192	536	916
30	5570	3240	1100	797	---	1110	706	938	325	183	465	860
31	2940	---	978	783	---	986	---	825	---	180	455	---
TOTAL	25385	100874	109436	50728	41924	33645	31152	30143	16120	7372	12868	37495
MEAN	819	3362	3530	1636	1497	1085	1038	972	537	238	415	1250
MAX	5570	9600	15200	4660	3850	5450	2010	2960	1050	317	1610	3430
MIN	233	938	783	783	657	476	657	445	325	180	157	626
CFSM	6.30	25.9	27.2	12.6	11.5	8.35	7.99	7.48	4.13	1.83	3.19	9.62
IN.	7.26	28.87	31.32	14.52	12.00	9.63	8.91	8.63	4.61	2.11	3.68	10.73
AC-FT	50350	200100	217100	100600	83160	66730	61790	59790	31970	14620	25520	74370

CAL YR 1977 TOTAL 491917 MEAN 1348 MAX 15200 MIN 138 CFSM 10.4 IN 140.76 AC-FT 975700
WTR YR 1978 TOTAL 497142 MEAN 1362 MAX 15200 MIN 157 CFSM 10.5 IN 142.26 AC-FT 986100

12039003 HUMPTULIPS RIVER AT HUMPTULIPS, WA

LOCATION.--Lat 47°13'48", long 123°57'38", in SE¼SE¼ sec.7, T.20 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100105, at U.S. Highway 101 bridge at Humptulips, 1.2 mi (1.9 km) downstream from gaging station (12039000) and at mile 23.6 (38.0 km).

PERIOD OF RECORD.--Water years 1959-74, 1977 to current year.

REMARKS.--Prior to October 1970 published as Humptulips River near Humptulips (12039000).

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
NOV , 1977							
17...	1210	2350	52	6.4	8.4	0	10
JAN , 1978							
24...	1600	1330	45	7.0	9.4	5	1
MAR							
22...	1030	476	49	7.0	10.6	5	0
MAY							
17...	1600	1220	49	7.4	10.8	5	--
JUL							
24...	1715	195	65	7.7	19.5	5	0
SEP							
26...	1640	946	39	7.2	12.4	5	1

DATE	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1977							
17...	12.0	5	.23	.04	.03	.07	.21
JAN , 1978							
24...	11.9	<1	.66	.05	.01	.01	.03
MAR							
22...	11.2	4	.07	.02	.00	.00	.00
MAY							
17...	11.3	3	.11	.03	.01	.00	.00
JUL							
24...	10.9	13	.04	.02	.01	.00	.00
SEP							
26...	10.8	32	.14	.04	.02	.00	.00

12039220 MOCLIPS RIVER AT MOCLIPS, WA

LOCATION.--Lat 47°14'32", long 124°11'27", in NW¼NW¼ sec.9, T.20 N., R.12 W., Grays Harbor County, Hydrologic Unit 17100102, on right bank at old road crossing, 1.0 mi (1.6 km) northeast of Moclips and 1.4 mi (2.3 km) upstream from mouth.

DRAINAGE AREA.--35.0 mi² (90.6 km²).

PERIOD OF RECORD.--December 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 25 ft (7.6 m), from topographic map.

REMARKS.--Records excellent except those above 2,000 ft³/s (56.6 m³/s) and those for period Feb. 9 to Apr. 11, May 13 to June 20, and June 22 to Aug. 13, which are poor. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,260 ft³/s (121 m³/s) Dec. 26, 1975, gage height, 12.40 ft (3,780 m) from rating curve extended above 1,800 ft³/s (51.0 m³/s) on basis of velocity-area study; minimum, 7.8 ft³/s (0.22 m³/s), Aug. 5, 6, 7, 1975, gage height, 1.46 ft (0.445 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1900	2,010	56.9	8.03	2.448	Dec. 2	0800	*3,530	100	*11.26	3.432
Nov. 9	2300	2,080	58.9	8.18	2.493	Dec. 13	0400	2,270	64.3	8.61	2.624
Nov. 14	0600	2,090	59.2	8.20	2.499						

Minimum daily discharge, 8.6 ft³/s (0.24 m³/s) Aug. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	1430	1100	90	197	75	72	50	50	23	11	128
2	72	1140	2990	76	484	70	90	48	45	21	11	240
3	60	442	1210	155	430	68	110	46	42	20	10	167
4	52	237	475	295	253	66	140	51	40	20	10	256
5	46	230	292	373	175	64	230	52	38	19	9.5	195
6	43	448	571	259	170	200	180	44	36	18	9.2	110
7	42	743	466	265	514	600	140	38	34	17	9.0	77
8	41	373	298	659	565	350	110	35	35	17	8.6	74
9	42	1030	200	388	390	170	90	32	40	18	8.6	757
10	38	1810	571	220	230	100	80	36	45	19	9.5	631
11	34	802	1130	155	135	84	62	137	52	18	11	340
12	36	466	897	128	120	75	58	116	65	17	15	202
13	79	532	1800	128	105	140	60	250	90	16	13	155
14	64	1580	942	259	125	130	71	550	140	15	18	150
15	49	750	604	245	220	100	108	300	95	14	110	120
16	44	394	523	197	170	80	137	160	70	14	79	103
17	40	274	313	190	130	70	152	100	60	14	42	120
18	35	232	225	148	105	65	230	75	50	13	29	99
19	33	180	200	172	110	60	207	60	45	13	30	76
20	31	146	170	150	95	55	190	52	40	13	29	71
21	33	122	139	669	90	52	185	48	35	12	24	135
22	42	109	118	529	90	48	268	47	36	12	19	307
23	242	114	103	262	90	70	217	45	34	11	30	343
24	337	202	92	170	85	350	141	46	32	12	316	274
25	382	799	82	135	135	1200	104	55	30	12	213	170
26	313	886	74	137	150	600	87	130	28	13	112	116
27	237	718	69	120	105	240	77	280	26	16	72	122
28	277	701	79	103	80	220	68	200	25	14	59	114
29	690	1030	182	97	---	140	59	140	23	12	48	177
30	862	451	157	90	---	90	54	80	23	12	38	167
31	532	---	116	84	---	75	---	60	---	12	36	---
TOTAL	4922	18371	16188	6948	5548	5707	3777	3363	1404	477	1439.4	5996
MEAN	159	612	522	224	198	184	126	108	46.8	15.4	46.4	200
MAX	862	1810	2990	669	565	1200	268	550	140	23	316	757
MIN	31	109	69	76	80	48	54	32	23	11	8.6	71
CFSM	4.54	17.5	14.9	6.40	5.66	5.26	3.60	3.09	1.34	.44	1.33	5.71
IN.	5.23	19.53	17.21	7.38	5.90	6.07	4.01	3.57	1.49	.51	1.53	6.37
AC-FT	9760	36440	32110	13780	11000	11320	7490	6670	2780	946	2860	11890

CAL YR 1977 TOTAL 80133.8 MEAN 220 MAX 2990 MIN 8.1 CFSM 6.29 IN 85.17 AC-FT 158900
WTR YR 1978 TOTAL 74140.4 MEAN 203 MAX 2990 MIN 8.6 CFSM 5.80 IN 78.80 AC-FT 147100

12039300 NORTH FORK QUINAULT RIVER NEAR AMANADA PARK, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'46", long 123°37'23", in SW¼ sec.6, T.24 N., R.7 W., Jefferson County, Hydrologic Unit 17100102, Olympic National Park, on right bank 15.5 mi (24.9 km) northeast of Amanda Park and at mile 5.2 (8.4 km).

DRAINAGE AREA.--74.1 mi^2 (191.9 km^2).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--November 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 620 ft (189 m), from topographic map.

REMARKS.--Water-discharge records good except those above 6,000 ft^3/s (170 m^3/s) from Oct. 1 to Dec. 10 and above 2,500 ft^3/s (70.1 m^3/s) from Dec. 11 to Sept. 30, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--13 years, 883 ft^3/s (25.00 m^3/s) 161.82 in/yr (4,110 mm/yr), 639,700 acre-ft/yr (789 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft^3/s (759 m^3/s) Nov. 1, 1977, gage height, 13.76 ft (4.194 m), from rating curve extended above 4,200 ft^3/s (119 m); minimum, 103 ft^3/s (2.92 m^3/s) Oct. 3, 1965, gage height, 1.93 ft (0.588 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft^3/s (170 m^3/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 24	1300	6,190	175	7.63	2.326	Dec. 2	0500	12,700	360	9.99	3.045
Nov. 1	1500	*26,800	759	*13.76	4.194	Dec. 10	2200	14,800	419	10.60	3.231
Nov. 25	1500	15,100	428	10.67	3.252	Dec. 13	1900	9,710	275	9.47	2.886
Nov. 28	2300	6,820	193	7.92	2.414	Sept. 9	1700	8,250	234	8.98	2.737

Minimum discharge, 169 ft^3/s (4.79 m^3/s) Oct. 21, gage height, 3.17 ft (0.966 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	285	9950	4370	470	484	376	638	491	900	692	269	1420
2	267	1920	6980	449	782	358	588	526	1030	647	269	990
3	249	1060	3470	860	1320	334	564	512	1210	612	269	800
4	237	762	2340	1920	870	334	620	449	1320	588	263	755
5	229	605	1970	1660	950	322	629	407	1320	588	241	556
6	229	712	2920	970	1420	376	556	400	1110	629	230	470
7	267	676	1960	2000	2130	1940	519	442	1010	629	230	407
8	249	446	1540	2760	1460	1080	505	540	960	612	225	442
9	237	1290	1400	1320	1270	674	498	710	1150	556	220	4420
10	217	2180	6550	1030	890	540	572	647	940	484	210	2070
11	206	1290	5400	900	728	491	533	647	970	463	236	1080
12	217	1320	3030	764	638	449	463	612	1010	442	364	782
13	253	1610	5040	773	572	435	449	1480	1140	498	225	710
14	209	2670	4300	1220	564	407	414	1890	1000	519	269	620
15	199	1530	2520	940	519	382	428	1080	840	526	421	588
16	195	1180	1640	860	477	370	449	820	764	491	241	556
17	185	857	1260	764	449	376	449	737	746	428	200	540
18	178	675	1070	674	456	382	477	764	850	414	205	463
19	178	567	940	647	556	394	656	880	860	414	225	421
20	172	484	840	629	572	394	647	1050	860	407	210	414
21	185	433	773	1140	596	435	564	940	890	407	195	746
22	199	399	719	830	588	505	588	692	810	414	200	1340
23	1420	398	656	665	656	1160	526	596	692	414	263	1050
24	2260	411	604	604	548	1420	519	556	656	376	1610	710
25	1710	5420	564	612	519	2740	638	556	638	376	1590	572
26	980	2410	533	588	484	1240	746	737	656	428	810	512
27	616	1660	505	526	435	1330	701	1210	737	370	463	512
28	2000	2180	656	498	407	1120	656	960	860	322	428	505
29	2270	2540	860	470	---	890	564	728	850	310	352	498
30	2610	1340	596	442	---	810	505	674	728	298	316	470
31	1230	---	505	428	---	719	---	746	---	280	463	---
TOTAL	19938	48975	66511	28413	21340	22783	16661	23479	27507	14634	11712	25419
MEAN	643	1633	2146	917	762	735	555	757	917	472	378	847
MAX	2610	9950	6980	2760	2130	2740	746	1890	1320	692	1610	4420
MIN	172	398	505	428	407	322	414	400	638	280	195	407
CFSM	8.68	22.0	29.0	12.4	10.3	9.92	7.49	10.2	12.4	6.37	5.10	11.4
IN.	10.01	24.59	33.39	14.26	10.71	11.44	8.36	11.79	13.81	7.35	5.88	12.76
AC-FT	39550	97140	131900	56360	42330	45190	33050	46570	54560	29030	23230	50420

CAL YR 1977 TOTAL 299929 MEAN 822 MAX 9950 MIN 172 CFSM 11.1 IN 150.57 AC-FT 594900
WTR YR 1978 TOTAL 327372 MEAN 897 MAX 9950 MIN 172 CFSM 12.1 IN 164.35 AC-FT 649300

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to current year.

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--No record Nov. 16-Sept. 30 due to malfunctions of the instrument or silt over the probe.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 14.5°C Aug. 7, 16-18, 1965; minimum, 1.0°C Jan. 31, 1968, sometimes during period Dec. 16, 1970 to Jan. 20, 1971, Mar. 1, 2, 1971, Dec. 16, 1975, Feb. 29, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum observed, 9.0 °C Oct. 1, 2; minimum observed 3.5°C Nov. 9, 10.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT . 1977												
17...	1430	185	100	7.2	6.6	11.6	K1200	<1	6	48	17	18
NOV												
16...	1300	1170	68	7.6	4.5	12.6	K26	4	K100	33	8	12
DEC												
20...	1100	840	78	7.2	3.4	12.8	6	<1	1	39	15	14
JAN . 1978												
26...	1100	580	61	7.3	4.0	12.7	11	<1	<1	43	14	16
MAR												
03...	1200	334	87	7.5	3.2	12.6	<1	<1	<1	45	14	17
22...	1500	477	75	7.6	6.2	11.9	<1	<1	<1	37	10	14
APR												
25...	1430	620	78	7.1	6.5	11.8	58	<1	<1	37	10	14
MAY												
18...	1100	692	78	7.6	5.7	12.2	4	<1	2	35	9	13
JUN												
12...	1300	830	56	7.0	12.2	11.5	K13	<2	<2	30	7	11
JUL												
18...	1115	394	70	7.4	11.2	10.8	10	1	2	34	9	13
AUG												
23...	1030	185	87	7.8	10.3	10.8	150	9	26	44	14	16
SEP												
11...	1100	1100	61	7.5	8.7	11.2	35	5	4	30	8	11

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT . 1977												
17...	.7	1.3	6	.1	.2	38	0	31	3.8	16	.8	.1
NOV												
16...	.7	1.5	9	.1	.2	30	0	25	1.2	6.7	2.3	.1
DEC												
20...	1.0	1.5	8	.1	.2	29	0	24	2.9	14	1.5	.1
JAN . 1978												
26...	.7	1.3	6	.1	.2	35	0	29	2.8	10	1.2	.0
MAR												
03...	.7	1.3	6	.1	.1	38	0	31	1.9	9.8	.9	.1
22...	.6	1.1	6	.1	.2	33	0	27	1.3	9.6	.9	.0
APR												
25...	.6	1.0	5	.1	.2	33	0	27	4.2	9.2	.9	.0
MAY												
18...	.5	.9	5	.1	.1	31	0	25	1.2	8.9	1.0	.0
JUN												
12...	.6	1.1	7	.1	.1	--	--	23	--	7.8	.8	.1
JUL												
18...	.3	1.4	8	.1	.1	--	--	25	--	8.7	.7	.1
AUG												
23...	.9	1.9	9	.1	.2	--	--	30	--	13	.8	.1
SEP												
11...	.7	1.3	8	.1	.2	--	--	22	--	8.7	1.2	.0

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER QUALITY DATA

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1977											
17...	5.1	50	60	61	.07	25.0	<1	.03	.01	6	3.0
NOV											
16...	4.8	50	--	43	.07	158	--	.05	.04	55	174
DEC											
20...	5.2	46	--	52	.06	104	--	.04	.01	9	20
JAN , 1978											
26...	5.1	48	--	52	.07	75.2	--	.02	.01	4	6.3
MAR											
03...	5.4	50	--	54	.07	45.1	--	.01	.01	4	3.6
22...	4.3	45	--	47	.06	58.0	--	.04	.01	4	5.2
APR											
25...	4.7	45	--	47	.06	75.3	--	.05	.00	7	12
MAY											
18...	4.6	48	--	44	.07	89.7	--	.02	.00	2	3.7
JUN											
12...	4.1	35	--	39	.05	78.4	--	.02	.00	4	9.0
JUL											
18...	5.4	42	--	45	.06	44.7	--	.00	.01	2	2.1
AUG											
23...	5.4	55	--	56	.07	27.5	--	.02	.01	1	.50
SEP											
11...	4.7	41	--	41	.06	122	--	.04	.01	8	26

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
OCT , 1977							
17...	1430	1	400	<10	10	<10	50
JUN , 1978							
12...	1300	1	200	1	10	38	240

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)
OCT , 1977							
17...	<100	4	.0	0	<10	160	.00
JUN , 1978							
12...	17	0	.0	0	0	20	.00

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL (UG/L)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL (UG/L)
JUN , 1978										
12...	1300	.0	0	.00	.0	.0	0	.00	.0	.00

DATE	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ETHION, TOTAL (UG/L)
JUN , 1978										
12...	.0	.00	.0	.00	.00	.0	.00	.00	.0	.00

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	MALA-THION, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JUN , 1978									
12...	.00	.0	.00	.0	.00	.0	.00	.00	.00

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN , 1978									
12...	.00	.00	.00	0	0	.00	.00	.00	.00

DATE	TIME	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	URANIUM DIS-SOLVED, EXTRAC-TION (UG/L)
OCT , 1977									
17...	1430	<.9	<.4	1.3	<.4	1.0	<.4	.06	.19

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.0	8.5	9.0	6.0	5.0	5.5						
2	9.0	8.0	8.5	5.0	5.0	5.0						
3	8.5	7.0	8.0	5.0	4.5	4.5						
4	8.0	7.0	8.0	5.0	4.5	4.5						
5	8.0	7.0	8.0	5.0	5.0	5.0						
6	8.0	8.0	8.0	5.0	5.0	5.0						
7	8.0	8.0	8.0	5.0	4.0	4.5						
8	8.0	8.0	8.0	4.0	4.0	4.0						
9	8.0	8.0	8.0	4.0	3.5	3.5						
10	8.0	8.0	8.0	4.0	3.5	3.5						
11	8.0	8.0	8.0	4.5	4.0	4.5						
12	8.0	8.0	8.0	4.5	4.0	4.5						
13	8.0	8.0	8.0	4.5	4.0	4.5						
14	8.0	7.0	8.0	4.0	4.0	4.0						
15	8.0	8.0	8.0	4.0	4.0	4.0						
16	8.0	8.0	8.0	---	---	---						
17	8.0	6.5	7.0	---	---	---						
18	7.0	6.5	6.5	---	---	---						
19	8.0	6.5	7.0	---	---	---						
20	8.0	6.5	7.0	---	---	---						
21	7.0	6.5	6.5	---	---	---						
22	7.0	6.5	6.5	---	---	---						
23	8.5	7.0	8.0	---	---	---						
24	8.0	7.0	8.0	---	---	---						
25	6.5	6.0	6.5	---	---	---						
26	6.0	6.0	6.0	---	---	---						
27	6.0	6.0	6.0	---	---	---						
28	6.0	6.0	6.0	---	---	---						
29	6.0	6.0	6.0	---	---	---						
30	6.0	5.5	5.5	---	---	---						
31	5.5	5.5	5.5									
MONTH	9.0	5.5	7.5	6.0	3.5	4.5						

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA

LOCATION.--Lat 47°27'28" long 123°53'17", in SW¼NE¼ sec.25, T.23 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at outlet of Quinault Lake, 50 ft (15 m) downstream from Olympic Highway bridge on U.S. Highway 101, 2.0 mi (3.2 km) southwest of Quinault, and at mile 33.4 (53.7 km).

DRAINAGE AREA.--264 mi² (684 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1316: 1923, 1925, 1933. WSP 1635: 1917.

GAGE.--Water-stage recorder. Datum of gage is 184.60 ft (56.266 m) National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Prior to Sept. 30, 1916, nonrecording gages at sites within 4 mi (6.4 km) northeast of present site, at different datum. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft (91 m) downstream from present site at datum 0.36 ft (0.110 m) higher than present datum.

REMARKS.--Water-discharge records excellent, except those for periods Jan. 3-24 and Mar. 9-23, which are fair. Flow affected by natural storage in Quinault Lake. No diversions above station.

AVERAGE DISCHARGE.--67 years, 2,843 ft³/s (80.51 m³/s) 146.24 in/yr (3,714 mm/yr), 2,060,000 acre-ft/yr (2,540 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,200 ft³/s (1,420 m³/s) Nov. 4, 1955, gage height, 20.51 ft (6.251 m); minimum, 276 ft³/s (7.82 m³/s) Sept. 12, 1944, gage height, 1.96 ft (0.597 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of approximately 22 ft (6.7 m), present datum discharge, 52,600 ft³/s (1,490 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0200	*23,200	657	*12.86	3.920	Dec. 11	2400	16,600	470	10.68	3.255
Dec. 2	1700	19,600	555	11.67	3.557						

Minimum discharge, 564 ft³/s (16.0 m³/s) Oct. 21, 22, gage height, 2.51 ft (0.765 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	11700	7210	1880	1740	1490	2800	1790	2220	1690	765	1810
2	1180	19800	17000	1750	2220	1400	2600	1690	2280	1640	733	3020
3	1090	11700	16500	2200	3250	1330	2400	1640	2430	1580	708	3080
4	1020	7270	11400	4000	3610	1270	2240	1590	2650	1530	690	3040
5	954	5200	7720	5400	3380	1200	2450	1500	2850	1460	673	2770
6	906	4190	6590	4400	4080	1600	2500	1410	2890	1430	655	2420
7	882	4230	7220	3900	5980	2110	2340	1350	2720	1420	637	2120
8	858	3690	5900	5600	7540	4020	2150	1330	2540	1410	625	1900
9	842	3710	4750	7500	6940	3200	1990	1380	2510	1390	676	3820
10	810	7300	5890	5600	5620	2700	1890	1510	2590	1350	670	8760
11	772	7640	15300	4300	4410	2300	1860	1670	2440	1290	675	7460
12	750	6480	15500	3600	3580	2000	1780	1790	2390	1220	756	5430
13	750	6550	13500	3100	3000	1800	1690	2230	2490	1160	765	4170
14	735	10100	15300	2900	2640	1600	1620	4120	2710	1150	765	3400
15	705	9440	13400	3400	2460	1500	1560	5160	2630	1140	826	2840
16	682	7190	10100	3300	2220	1400	1580	4420	2410	1140	850	2470
17	653	5690	7350	3100	2020	1400	1620	3610	2200	1130	806	2170
18	625	4560	5600	2800	1880	1300	1740	3050	2080	1090	750	2010
19	604	3750	4600	2500	1820	1300	1900	2730	2060	1050	720	1960
20	577	3160	3900	2400	1810	1400	2280	2650	2020	1020	700	1710
21	577	2730	3400	2700	1810	1500	2430	2710	2010	988	680	1680
22	577	2430	2950	3500	1800	1800	2570	2570	2000	965	675	2220
23	995	2220	2670	4100	1810	2100	2540	2300	1920	953	675	3060
24	1670	2180	2420	3300	1810	2740	2360	2070	1800	939	1540	3050
25	3120	3770	2210	2700	1780	6640	2210	1920	1690	918	3200	2700
26	3580	10700	2040	2520	1740	6950	2180	1990	1620	906	3740	2370
27	3090	8460	1890	2300	1660	5500	2190	2490	1580	954	3070	2140
28	3040	7180	1830	2100	1570	4820	2140	2990	1620	930	2460	1990
29	5800	9280	2140	1900	---	4100	2050	2820	1710	883	2010	1880
30	9440	7610	2190	1800	---	3500	1920	2520	1740	835	1710	1770
31	8560	---	2050	1710	---	3000	---	2300	---	797	1550	---
TOTAL	57124	199910	220520	102260	84180	78970	63580	73300	66800	36358	35765	89120
MEAN	1843	6664	7114	3299	3006	2547	2119	2365	2227	1173	1154	2971
MAX	9440	19800	17000	7500	7540	6950	2800	5160	2890	1690	3740	8760
MIN	577	2180	1830	1710	1570	1200	1560	1330	1580	797	625	1680
CFSM	6.98	25.2	26.9	12.5	11.4	9.65	8.03	8.96	8.44	4.44	4.37	11.3
IN.	8.05	28.17	31.07	14.41	11.86	11.13	8.96	10.33	9.41	5.12	5.04	12.56
AC-FT	113300	396500	437400	202800	167000	156600	126100	145400	132500	72120	70940	176800

CAL YR 1977 TOTAL 1020248 MEAN 2795 MAX 19800 MIN 443 CFSM 10.6 IN 143.76 AC-FT 2024000
WTR YR 1978 TOTAL 1107887 MEAN 3035 MAX 19800 MIN 577 CFSM 11.5 IN 156.11 AC-FT 2197000

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1963-74, 1977 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1977 17...	0930	5800	61	6.6	7.2	5	15	10.3	4	26
JAN , 1978 25...	1330	2670	50	7.0	6.0	10	10	11.5	14	24
MAR 24...	0900	2470	55	7.2	9.0	5	1	11.5	<1	26
MAY 17...	1850	3400	66	7.4	--	5	--	10.7	3	24
JUL 26...	0900	890	62	7.5	19.5	0	1	9.0	1	28
SEP 29...	1100	1900	55	7.2	12.9	5	1	10.0	3	26

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)
NOV , 1977 17...	25	9.0	.7	1.6	12	.1	.2	1	0
JAN , 1978 25...	6	8.5	.6	1.2	10	.1	.2	19	0
MAR 24...	5	9.2	.8	.9	7	.1	.2	26	0
MAY 17...	4	8.1	.8	1.8	14	.2	.2	24	0
JUL 26...	4	9.8	.8	1.6	11	.1	.1	29	0
SEP 29...	6	9.3	.7	1.7	12	.1	.3	24	0

DATE	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1977 17...	1	.4	4.6	130	.08	.10	.04	.01	.03
JAN , 1978 25...	16	3.0	6.0	1.6	.07	.06	.03	.00	.00
MAR 24...	21	2.6	6.1	1.7	.04	.02	.01	.00	.00
MAY 17...	20	1.5	6.6	1.8	.02	.03	.01	.00	.00
JUL 26...	24	1.5	5.9	1.5	.01	.02	.01	.00	.00
SEP 29...	20	2.4	7.4	1.5	.05	.11	.16	.00	.00

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV , 1977 17...	1	2	0	14	23	.0	0	0	80
JAN , 1978 25...	0	6	0	9	32	.0	0	1	30
MAR 24...	1	2	0	3	12	.0	0	0	10
MAY 17...	1	1	0	7	5	.0	0	0	10
JUL 26...	1	4	0	3	0	.1	0	0	10
SEP 29...	0	<1	0	5	4	.0	0	0	10

12039520 RAFT RIVER BELOW RAINY CREEK NEAR QUEETS, WA

LOCATION.--Lat 47°27'17", long 124°18'58", in SW¼NE¼ sec.27, T.23 N., R.13 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at the mouth of Rainy Creek, 5.9 mi (9.5 km) south of Queets and at mile 1.4 (2.3 km).

DRAINAGE AREA.--76.0 mi² (196.8 km²).

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (3 m), from topographic map.

REMARKS.--Records excellent except those above 10,000 ft³/s (283 m³/s) which are poor. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s (487 m³/s) Dec. 26, 1975, gage height, 16.57 ft (5.051 m) from rating extended above 5,000 ft³/s (142 m³/s); minimum, 38 ft³/s (1.08 m³/s) Aug. 22, 1977; minimum gage height, 3.12 ft (0.951 m). Aug. 6, 7, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft³/s)	(m³/s)	(ft)	(m)			(ft³/s)	(m³/s)	(ft)	(m)
Nov. 9	2200	7,530	213	11.62	3.542	Dec. 2	0700	*11,600	329	*14.00	4.267
Nov. 14	0600	8,760	248	12.39	3.776						

Minimum discharge, 43 ft³/s (1.22 m³/s) Aug 7-10, gage height, 3.27 ft (0.997 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	3930	4480	221	670	190	197	142	157	81	51	1490
2	133	2030	7710	190	1540	178	249	142	142	76	49	1220
3	115	670	2080	770	1530	166	281	139	133	76	47	478
4	103	406	968	1050	629	163	350	142	124	73	47	835
5	97	451	647	1030	386	157	770	142	118	71	45	470
6	91	1100	1270	566	422	166	616	130	112	71	45	267
7	94	1660	870	865	2060	1950	326	121	109	68	45	190
8	97	615	539	2290	1630	950	246	115	106	68	43	178
9	103	2850	398	800	950	390	200	112	124	68	43	2360
10	94	4730	1920	438	575	270	181	118	142	73	47	1560
11	85	1370	2550	323	370	228	169	291	166	73	56	643
12	88	948	1870	270	291	214	157	281	190	68	190	370
13	155	1540	3390	284	249	378	154	1090	319	66	118	309
14	130	4800	1780	850	291	356	166	2420	458	63	169	319
15	103	1220	1230	575	661	274	274	1020	336	61	998	246
16	106	830	1070	438	406	221	406	575	221	61	312	232
17	100	675	562	454	295	190	406	316	169	61	163	330
18	88	514	482	316	260	172	775	228	142	59	115	239
19	83	371	450	346	263	160	598	187	127	59	130	175
20	80	299	358	316	235	151	566	166	115	56	124	157
21	88	251	291	2200	221	145	486	151	109	54	97	512
22	127	223	256	1150	221	142	1110	148	109	54	81	1120
23	1300	247	232	566	218	190	580	145	103	51	157	880
24	1030	600	207	354	214	850	319	145	97	51	1870	517
25	1100	2980	193	288	370	4560	242	142	95	51	580	312
26	775	1830	181	298	386	986	204	309	92	56	323	232
27	460	2180	172	263	267	571	184	1220	89	66	225	386
28	795	1920	197	232	214	544	169	665	84	61	187	319
29	1680	2920	616	211	---	342	157	319	81	56	154	625
30	2340	745	402	193	---	263	148	218	81	54	121	382
31	942	---	278	190	---	218	---	178	---	51	151	---
TOTAL	12741	44905	37649	18337	15824	15737	10686	11517	4452	1957	6783	17353
MEAN	411	1497	1214	592	565	508	356	372	148	63.1	219	578
MAX	2340	4800	7710	2290	2060	4560	1110	2420	458	81	1870	2360
MIN	80	223	172	190	214	142	148	112	81	51	43	157
CFSM	5.41	19.7	16.0	7.79	7.43	6.68	4.68	4.90	1.95	.83	2.88	7.61
IN.	6.24	21.98	18.43	8.98	7.75	7.70	5.23	5.64	2.18	.96	3.32	8.49
AC-FT	25270	89070	74680	36370	31390	31210	21200	22840	8830	3880	13450	34420

CAL YR 1977 TOTAL 205097 MEAN 562 MAX 7710 MIN 39 CFSM 7.40 IN 100.39 AC-FT 406800
WTR YR 1978 TOTAL 197941 MEAN 542 MAX 7710 MIN 43 CFSM 7.13 IN 96.89 AC-FT 392600

12040500 QUEETS RIVER NEAR CLEARWATER, WA

(National stream-quality accounting network station)

LOCATION.--Lat 47°32'17", long 124°18'52", in NE¼SW¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinault Indian Reservation, on right bank, 2.4 mi (3.9 km) downstream from mouth of Clearwater River, 0.8 mi (1.3 km) east of Queets and at mile 4.6 (7.4 km).

DRAINAGE AREA.--445 mi² (1,153 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1930 to November 1949, water years 1950-67 (annual maximum), April 1974 to current year.

REVISED RECORDS.--WSP 1316: 1931-49(M).

GAGE.--Water-stage recorder. Datum of gage is 14.5 ft (4.42 m) National Geodetic Vertical Datum of 1929 (river-profile survey). September 15, 1930 to January 22, 1935, at datum 4.0 ft (1.22 m) higher.

REMARKS.--Water-discharge record excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--23 years (water years 1931-49, 1975-78), 4,167 ft³/s (118.0 m³/s), 127.16 in/yr (3,230 mm/yr), 3,019,000 acre-ft (3,720 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,400 ft³/s (3,690 m³/s) Jan. 22, 1935, gage height, 27.0 ft (8.23 m) from flood marks, present datum; minimum, 368 ft³/s (10.4 m³/s) Sept. 9, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 42,000 ft³/s (1,190 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2200	68,500	1,940	20.91	6.373	Dec. 2	0900	*71,200	2,020	*21.25	6.477
Nov. 14	0700	53,600	1,520	19.05	5.806						

Minimum discharge, 643 ft³/s (18.2 m³/s) Aug. 9, gage height, 5.94 ft (1.811 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1670	33900	25700	2360	2980	1830	2960	1840	2370	1410	738	6020
2	1520	25800	50300	2180	5480	1710	2850	1740	2350	1360	738	8180
3	1400	10900	23000	4340	8630	1610	2820	1730	2370	1290	738	4680
4	1310	7270	13500	8750	5880	1550	3020	1720	2430	1280	746	5000
5	1230	5660	9170	8540	4540	1480	4100	1600	2440	1220	722	3820
6	1180	6020	11300	5970	6070	1500	3860	1450	2250	1220	690	3120
7	1280	8210	10800	7150	11400	8810	3040	1390	2040	1250	674	2690
8	1190	5220	7440	14900	12100	6900	2740	1390	1970	1250	674	2460
9	1260	10600	5950	8180	9260	4000	2490	1480	2210	1210	674	10500
10	1100	22600	17600	5920	6500	3090	2350	1590	2330	1150	674	12500
11	1030	11800	28400	4870	4980	2770	2300	2510	2040	1120	730	7730
12	1010	9950	20200	4060	4080	2500	2060	2700	2160	1040	1850	5240
13	1280	12500	23700	3680	3500	2600	2010	4500	2980	1040	1310	4340
14	1080	30900	22200	5280	3390	2510	2060	11600	3320	1090	1010	3640
15	990	12700	14800	4780	3750	2300	2220	7700	2880	1090	2640	3180
16	981	9710	11100	3980	3090	2080	2640	5150	2330	1090	1550	2960
17	918	7660	8000	3910	2820	1970	2530	3870	2060	1030	1100	3120
18	873	6040	6460	3220	2630	1880	3280	3220	1980	963	972	2600
19	846	4890	5570	3070	2670	1790	3260	2940	1950	954	1140	2290
20	811	4090	4660	2860	2570	1700	4220	2800	1850	945	1060	2120
21	837	3540	4080	6000	2470	1620	3960	2720	1840	945	927	2690
22	936	3150	3640	6400	2330	1620	5530	2400	1820	936	864	4980
23	6190	3000	3250	4540	2330	2350	4260	2150	1650	963	936	5480
24	6120	3680	3010	3660	2210	5370	3390	2010	1520	945	5860	3910
25	7530	17100	2750	3300	2470	20700	2960	1910	1440	882	6020	3120
26	6590	16900	2530	3320	2330	8600	2820	2930	1410	945	5680	2770
27	4330	11600	2360	2910	2070	6670	2600	5020	1420	1050	3260	2930
28	7420	12700	2370	2610	1950	5970	2400	4460	1530	918	2630	2540
29	13000	21300	4260	2420	---	4540	2150	3230	1620	837	2160	2740
30	18800	9370	3040	2230	---	3750	1970	2740	1520	794	1840	2560
31	10400	---	2640	2140	---	3250	---	2440	---	770	2020	---
TOTAL	105112	348760	353780	147530	124480	119020	88850	94930	62080	32987	52627	129910
MEAN	3391	11630	11410	4759	4446	3839	2962	3062	2069	1064	1698	4330
MAX	18800	33900	50300	14900	12100	20700	5530	11600	3320	1410	6020	12500
MIN	811	3000	2360	2140	1950	1480	1970	1390	1410	770	674	2120
CFSM	7.62	26.1	25.6	10.7	9.99	8.63	6.66	6.88	4.65	2.39	3.82	9.73
IN.	8.79	29.15	29.57	12.33	10.41	9.95	7.43	7.94	5.19	2.76	4.40	10.86
AC-FT	208500	691800	701700	292600	246900	236100	176200	188300	123100	65430	104400	257700

CAL YR 1977 TOTAL 1669013 MEAN 4573 MAX 50300 MIN 594 CFSM 10.3 IN 139.52 AC-FT 3310000
WTR YR 1978 TOTAL 1660066 MEAN 4548 MAX 50300 MIN 674 CFSM 10.2 IN 138.77 AC-FT 3293000

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

PERIOD OF RECORD.--October 977 to September 1978.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV , 1977										
15...	1200	12500	48	7.5	7.9	20	35	--	11.6	14
JAN , 1978										
31...	1300	2090	66	7.4	6.2	--	6	--	12.0	3
MAR										
02...	1500	1700	60	7.4	5.8	--	2	--	12.6	<1
23...	1100	1910	64	7.4	8.2	--	3	--	10.9	8
APR										
26...	1200	2830	60	6.9	9.3	--	2	--	11.4	4
MAY										
19...	1100	2990	59	6.7	10.8	--	2	--	10.9	5
JUN										
20...	1330	1900	57	7.8	13.8	--	--	1.1	10.5	3
JUL										
25...	1330	909	67	7.6	17.8	--	--	.90	10.2	5
AUG										
31...	1330	1830	61	8.2	14.8	--	--	2.5	10.1	--
SEP										
27...	0930	3070	54	7.4	11.8	--	--	1.9	10.2	120

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)
NOV , 1977										
15...	14	21	7	6.5	1.0	2.3	19	.2	.4	17
JAN , 1978										
31...	K8	29	7	10	.9	2.8	17	.2	.4	26
MAR										
02...	<1	25	7	8.7	.9	2.5	17	.2	.3	23
23...	1	29	8	10	1.0	2.8	17	.2	.4	26
APR										
26...	2	23	3	7.7	.9	2.3	18	.2	.3	24
MAY										
19...	3	25	5	8.6	.9	2.4	17	.2	.2	25
JUN										
20...	<1	27	8	9.4	.8	3.3	21	.3	.3	--
JUL										
25...	<1	33	10	11	1.2	2.6	15	.2	.3	--
AUG										
31...	15	28	7	9.3	1.1	2.5	16	.2	.3	--
SEP										
27...	K30	24	6	8.1	.9	3.0	21	.3	.3	--

DATE	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)
NOV , 1977										
15...	0	14	.9	5.4	3.4	--	--	--	--	--
JAN , 1978										
31...	0	21	1.7	10	2.9	.1	6.1	32	46	.04
MAR										
02...	0	19	1.5	5.7	3.1	.0	5.9	36	38	.05
23...	0	21	1.7	7.4	2.6	.0	5.3	39	42	.05
APR										
26...	0	25	4.8	5.9	2.7	.0	6.0	38	38	.05
MAY										
19...	0	21	8.0	6.2	2.5	.0	5.8	50	39	.07
JUN										
20...	--	19	--	7.7	5.0	.1	5.6	42	44	.06
JUL										
25...	--	23	--	10	2.0	.1	5.3	46	47	.06
AUG										
31...	--	21	--	8.5	2.3	.1	5.9	42	43	.06
SEP										
27...	--	18	--	8.9	3.0	.0	6.0	41	41	.06

K Results based upon colony counts outside the ideal range.

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)
NOV , 1977										
15...	--	--	.14	.12	--	--	--	--	--	--
JAN , 1978										
31...	181	14	.14	.01	.08	.09	.04	.05	.23	1.0
MAR										
02...	165	17	.04	.00	.03	.03	.00	.04	.07	.31
23...	201	6	.06	.01	.28	.29	.00	.29	.35	1.6
APR										
26...	290	4	.08	.01	.22	.23	.01	.22	.31	1.4
MAY										
19...	404	3	.03	.01	.22	.23	.13	.10	.26	1.2
JUN										
20...	215	0	.01	.01	.06	.07	.00	.11	.08	.35
JUL										
25...	113	5	.01	.00	.14	.14	.01	.13	.15	.66
AUG										
31...	208	16	.04	.01	.24	.25	.09	.16	.29	1.3
SEP										
27...	340	12	.05	.01	.11	.12	.00	.15	.17	.75

DATE	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV , 1977										
15...	.08	--	.00	.00	--	--	--	--	--	--
JAN , 1978										
31...	.01	.02	--	--	--	.9	.1	5	28	88
MAR										
02...	.01	.01	--	--	1.1	--	--	4	18	94
23...	.02	.00	--	--	1.0	--	--	4	21	90
APR										
26...	.01	.00	--	--	--	2.4	.3	2	15	96
MAY										
19...	.00	.00	--	--	1.1	--	--	3	24	96
JUN										
20...	.01	.01	--	--	13	--	--	3	15	91
JUL										
25...	.00	.00	--	--	--	1.3	.2	2	4.9	89
AUG										
31...	.02	.02	--	--	1.6	--	--	4	20	83
SEP										
27...	.02	.01	--	--	3.0	--	--	4	33	90

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
NOV , 1977										
15...	1200	--	--	1	--	--	300	--	--	0
JAN , 1978										
31...	1300	1	0	1	0	0	0	10	9	1
APR										
26...	1200	2	1	1	200	0	300	3	2	1
JUL										
25...	1330	5	3	2	200	0	200	8	8	0

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
NOV , 1977										
15...	--	--	0	--	--	--	--	--	6	--
JAN , 1978										
31...	10	10	0	1	0	1	28	26	2	340
APR										
26...	0	0	0	3	3	0	3	0	3	350
JUL										
25...	10	10	0	2	0	2	8	5	3	200

DATE	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)
NOV , 1977										
15...	--	--	--	--	8	--	--	--	.0	--
JAN , 1978										
31...	--	60	130	120	6	10	0	10	.0	.0
APR										
26...	--	10	19	12	7	0	0	0	2.0	2.0
JUL										
25...	170	30	61	52	9	10	0	10	.0	.0

DATE	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
NOV , 1977										
15...	--	--	--	0	--	--	0	--	--	20
JAN , 1978										
31...	.0	0	0	0	1	1	0	70	10	60
APR										
26...	.0	0	0	0	0	0	0	10	0	10
JUL										
25...	.0	0	0	0	1	1	0	10	0	10

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO JUNE 1978

DATE	MAR 23,78		MAY 19,78		JUN 20,78	
TIME	1100		1100		1330	
TOTAL CELLS/ML	270		160		1400	
DIVERSITY: DIVISION	0.3		1.0		0.9	
.CLASS	0.3		1.0		0.9	
..ORDER	0.3		1.0		0.9	
...FAMILY	1.8		1.6		1.3	
....GENUS	2.1		1.6		1.3	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	130#	47	--	-	250#	18
....COCCONEIS	14	5	--	-	--	-
...CYMBELLACEAE						
....AMPHORA	43#	16	--	-	--	-
....CYMBELLA	--	-	14	8	69	5
...FRAGILARIACEAE						
....HANNAEA	14	5	--	-	--	-
....SYNEDRA	--	-	41#	25	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	57#	21	14	8	23	2
...NAVICULACEAE						
....NAVICULA	--	-	--	-	46	3
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROCCOCCALES						
...CHROCCOCCAEAE						
....ANACYSTIS	14	5	95#	58	1000#	72

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

Additional phytoplankton data available from the District office in Tacoma.

DATE	TIME	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO- SURE (DAYS)
MAY , 1978						
19...	1100	2.28	2.60	.330	.050	23
JUL						
25...	1330	5.83	8.19	1.50	1.47	35
SEP						
27...	0930	6.14	6.38	.400	.000	27

12041200 HOH RIVER AT U.S. HIGHWAY 101, NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 124°14'59", in NE¼NE¼ sec.33, T.27 N., R.12 W., Jefferson County, Hydrologic Unit 17100101, on left bank 250 ft (76 m) downstream from U.S. Highway 101, 1.0 mi (1.6 km) downstream from Hell Roaring Creek, 11.5 mi (18.5 km) southeast of Forks, and at mile 15.4 (24.8 km).

DRAINAGE AREA.--253 m^2 (655 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 163.64 ft (49.877 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records excellent except those above 20,000 ft^3/s (566 m^3/s) and those for periods Feb. 20 to Mar. 8, Aug. 11-22, and Aug. 27 to Sept. 29, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 2,551 ft^3/s (72.24 m^3/s), 136.93 in/yr (3,478 mm/yr), 1,848,000 acre-ft/yr (2,280 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,000 ft^3/s (1,300 m^3/s) Jan. 15, 1961, gage height, 17.74 ft (5.407 m); minimum, 396 ft^3/s (11.2 m^3/s) Nov. 4, 1974; minimum gage height, 2.40 ft (0.732 m) Sept. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s (453 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	2200	*44,800	1,270	*17.73	5.404	Dec. 2	1000	27,600	782	14.07	4.289
Nov. 14	0600	16,100	456	11.03	3,362	Dec. 11	0400	16,800	476	11.25	3.429
Nov. 25	2200	17,700	501	11.49	3.502						

Minimum discharge, 580 ft^3/s (16.4 m^3/s) Oct. 20, 21, gage height, 3.48 ft (1.061 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	914	17800	9050	1480	1380	1000	1580	1090	1460	1510	1010	3000
2	850	13400	20600	1410	1940	940	1480	1090	1620	1490	1060	4000
3	787	5750	10800	1950	2840	910	1410	1100	1830	1410	1130	2500
4	738	4110	6330	3530	2270	870	1420	1060	2010	1420	1230	2700
5	698	3320	4500	3620	2010	840	1470	970	2170	1330	1130	2000
6	692	3200	5150	2780	2560	900	1710	940	2090	1350	1050	1600
7	766	3610	4950	3330	3650	3300	1610	930	1870	1410	1060	1400
8	717	2820	3610	6970	3830	2800	1380	930	1770	1440	1100	1300
9	724	3940	3050	3930	3200	1760	1280	1100	1900	1430	1200	3300
10	656	6770	6430	2990	2490	1450	1210	1200	1880	1290	1120	6100
11	626	4810	14100	2540	2080	1320	1160	1430	1620	1190	1200	3300
12	650	4540	9830	2210	1820	1220	1200	1490	1790	1110	1500	2600
13	843	5350	10300	2030	1660	1220	1130	1790	2120	1200	1100	2300
14	724	10900	11500	2470	1620	1180	1100	4020	1940	1320	1000	2000
15	724	5430	6870	2380	1660	1120	1110	3410	1680	1380	1600	1900
16	766	4290	5130	2070	1470	1050	1110	2300	1520	1420	1200	2000
17	692	3530	3960	1930	1350	1000	1280	1850	1430	1350	1000	1700
18	650	2920	3270	1710	1290	978	1220	1640	1490	1230	900	1500
19	632	2540	2810	1600	1290	962	1310	1580	1600	1200	1200	1300
20	596	2270	2490	1500	1250	930	1380	1700	1550	1200	1000	1200
21	585	2080	2300	2190	1200	914	1670	1820	1560	1230	900	1500
22	650	1930	2140	2320	1200	938	1560	1580	1580	1290	800	2300
23	3030	1850	1970	1880	1200	1240	1940	1390	1450	1400	858	3400
24	3260	1960	1840	1670	1150	2080	1630	1270	1340	1370	2250	2100
25	3720	6870	1720	1600	1200	5710	1380	1210	1300	1310	3130	1800
26	3000	9050	1630	1610	1180	3170	1350	1340	1310	1440	3050	1700
27	2190	5110	1550	1480	1100	2680	1350	1820	1410	1510	2400	1900
28	3170	5110	1560	1400	1050	2670	1310	1990	1580	1270	2000	1600
29	4950	7800	2150	1320	---	2200	1240	1620	1750	1160	1800	1700
30	7350	4340	1830	1260	---	1900	1160	1420	1670	1100	1600	1500
31	4500	---	1610	1220	---	1720	---	1350	---	1060	1500	---
TOTAL	50850	157400	165030	70380	50940	50972	41140	48430	50290	40820	43078	67200
MEAN	1640	5247	5324	2270	1819	1644	1371	1562	1676	1317	1390	2240
MAX	7350	17800	20600	6970	3830	5710	1940	4020	2170	1510	3130	6100
MIN	585	1850	1550	1220	1050	840	1100	930	1300	1060	800	1200
CFSM	6.48	20.7	21.0	8.97	7.19	6.50	5.42	6.17	6.63	5.21	5.49	8.85
IN.	7.48	23.14	24.27	10.35	7.49	7.49	6.05	7.12	7.39	6.00	6.33	9.88
AC-FT	100900	312200	327300	139600	101000	101100	81600	96060	99750	80970	85450	133300

CAL YR 1977 TOTAL 844336 MEAN 2313 MAX 20600 MIN 585 CFSM 9.14 IN 124.15 AC-FT 1675000
WTR YR 1978 TOTAL 836530 MEAN 2292 MAX 20600 MIN 585 CFSM 9.06 IN 123.00 AC-FT 1659000

12041200 HOH RIVER AT U.S. HIGHWAY 101 NEAR FORKS, WA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-61, 1962-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1970 to April 1971.

REMARKS.--Records published as 12041000 July 1960 to September 1961.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
NOV , 1977												
15...	1530	5040	63	7.2	7.2	10	45	11.7	--	12	30	8
JAN , 1978												
25...	1100	1590	71	7.2	6.6	5	2	12.1	--	8	34	11
MAR												
23...	1430	1210	78	7.6	9.5	5	2	11.2	--	8	35	7
MAY												
18...	1500	1640	77	7.6	11.7	5	--	11.2	--	2	33	7
JUL												
25...	1000	1330	68	7.4	11.2	5	4	10.6	--	26	29	7
SEP												
20...	1125	1200	82	7.2	9.6	--	2	11.2	98	27	38	11
29...	1500	1530	80	7.8	11.6	10	8	10.6	--	4	34	8

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
NOV , 1977											
15...	10	1.1	1.9	12	.2	.2	27	0	22	2.7	7.1
JAN , 1978											
25...	12	1.0	2.0	11	.2	.2	28	0	23	2.8	8.7
MAR											
23...	12	1.1	1.5	9	.1	.2	34	0	28	1.4	8.0
MAY											
18...	11	1.3	2.0	12	.2	.2	32	0	26	1.3	9.2
JUL											
25...	10	.9	1.3	9	.1	.1	26	0	21	1.7	8.2
SEP											
20...	13	1.3	2.3	12	.2	.2	--	--	27	--	11
29...	12	.9	1.9	11	.1	.2	31	0	25	.8	10

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
NOV , 1977											
15...	2.8	--	--	--	.13	.16	--	--	--	--	.10
JAN , 1978											
25...	2.4	--	--	--	.09	.03	--	--	--	--	.01
MAR											
23...	2.5	--	--	--	.03	.02	--	--	--	--	.01
MAY											
18...	2.1	--	--	--	.05	.02	--	--	--	--	.01
JUL											
25...	.9	--	--	--	.02	.06	--	--	--	--	.02
SEP											
20...	1.8	5.5	51	.07	.10	.02	.05	.07	.17	.80	.01
29...	1.7	--	--	--	.07	.04	--	--	--	--	.03

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	ARSENIC DIS-SOLVED (UG/L AS AS)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV , 1977											
15...	.00	.00	1	1	0	2	2	.0	0	0	40
JAN , 1978											
25...	.00	.00	2	2	0	4	9	.0	0	1	20
MAR											
23...	.00	.00	1	0	0	4	7	.0	0	0	10
MAY											
18...	.00	.00	0	1	10	4	2	.0	0	0	10
JUL											
25...	.00	.00	1	5	10	4	4	.0	0	0	<3
SEP											
20...	--	--	--	--	--	--	--	--	--	--	--
29...	.01	.03	0	<1	0	14	0	.0	0	0	20

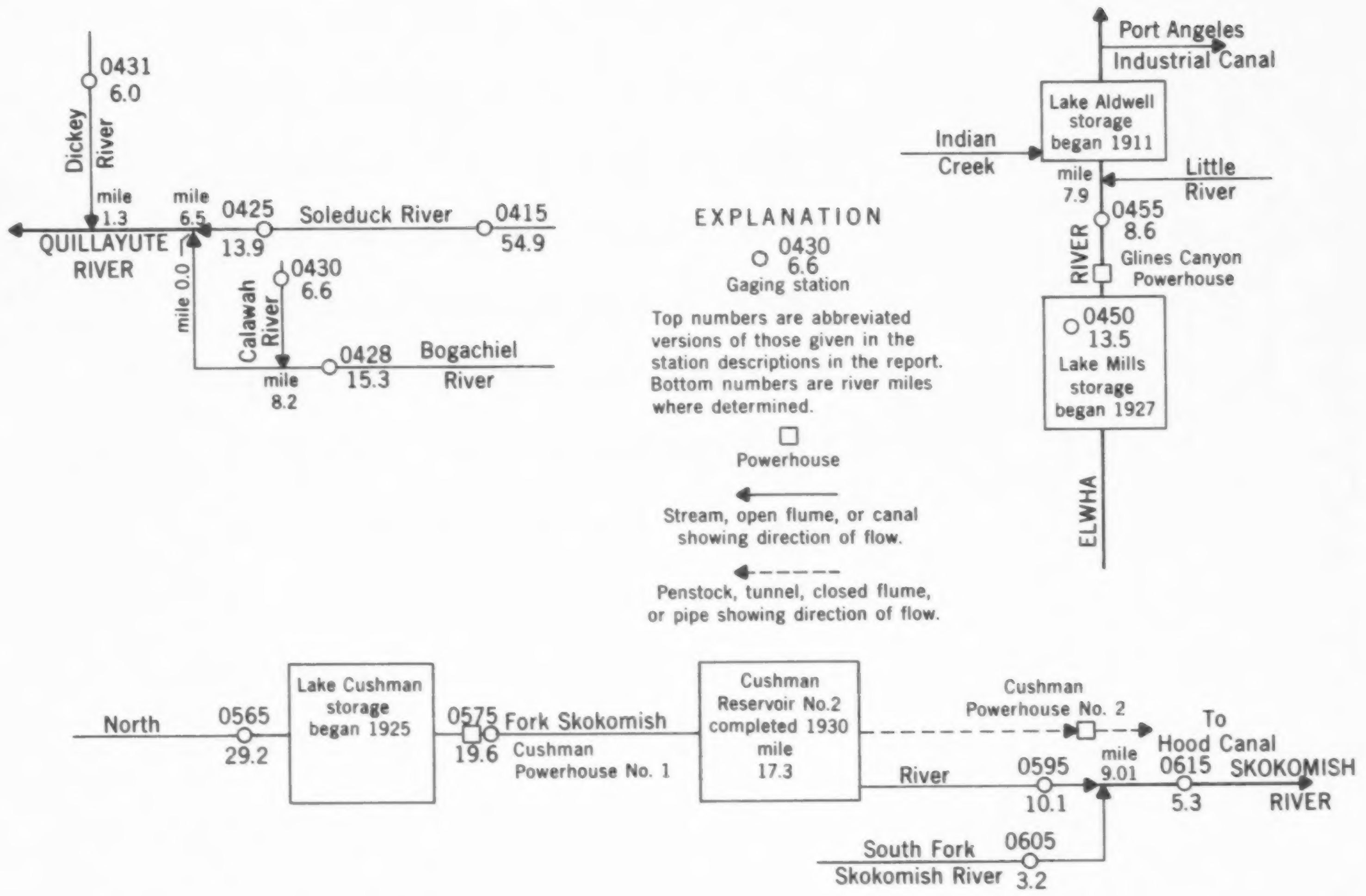

0431
6.0
Dickey River
mile 1.3
mile 6.5
QUILLAYUTE RIVER
0425
13.9
Soleduck River
0415
54.9
mile 0.0
Calawah River
0430
6.6
mile 8.2
0428
15.3
Bogachiel River
EXPLANATION
0430
6.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Port Angeles Industrial Canal
Lake Aldwell storage began 1911
Indian Creek
Little River
mile 7.9
0455
8.6
RIVER
Glines Canyon Powerhouse
0450
13.5
Lake Mills storage began 1927
ELWHA
North
0565
29.2
Lake Cushman storage began 1925
0575
19.6
Fork Skokomish
Cushman Powerhouse No. 1
Cushman Reservoir No.2 completed 1930 mile 17.3
Cushman Powerhouse No. 2
To Hood Canal
River
0595
10.1
mile 9.01
0615
5.3
SKOKOMISH RIVER
South Fork Skokomish River
0605
3.2

Figure 8. Gaging stations in Quillayute, Elwha, and Skokomish River basins.

12041500 SOLEDUCK RIVER NEAR FAIRHOLM, WA

LOCATION.--Lat 48°02'40", long 123°57'28", in lot 4, SE¼SW¼ sec.35, T.30 N., R.10 W., Clallam County, Hydrologic Unit 17100101, Olympic National Park, on right bank 0.1 mi (0.2 km) downstream from South Fork, 2.6 mi (4.2 km) southwest of Fairholm, and at mile 54.9 (88.3 km).

DRAINAGE AREA.--83.8 mi² (217.0 km²).

PERIOD OF RECORD.--October 1917 to September 1921, October 1933 to September 1971, water years 1972-76 (annual maximum), October 1976 to current year.

REVISED RECORDS.--WSP 1182: 1918-19, 1920(M), 1921, 1934-39, 1940(M), 1941-42, 1943(M), 1944-46, 1947-48(M). WSP 1216: Drainage area. WSP 1286: 1939, 1949.

GAGE.--Water-stage recorder. Altitude of gage is 1,060 ft (323 m), from topographic map. October 1917 to September 1921, water-stage recorder and Oct. 4 to Nov. 4, 1933, nonrecording gage, at same site at datum 1.2 ft (0.37 m) higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.-- 44 years (water years 1918-21, 1934-71, 1977-78), 625 ft³/s (17.70 m³/s), 101.28 in/yr (2,573 mm/yr), 452,800 acre-ft/yr (558 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft³/s (666 m³/s) Nov. 26, 1949, gage height, 16.42 ft (5.005 m) from high-water mark in well, from rating curve extended above 13,000 ft³/s (368 m³/s) on basis of slope-area measurement of peak flow; minimum, 51 ft³/s (1.44 m³/s) Sept. 11, 12, 1944; minimum gage height, 0.70 ft (0.213 m) Aug. 9, 10, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1700	*14,400	408	*12.43	3.789	Dec. 10	2400	6,990	198	8.20	2.499
Nov. 25	1800	7,130	202	8.29	2.527						

Minimum discharge, 81 ft³/s (2.29 m³/s) Aug. 9, 10, gage height, 0.70 ft (0.213 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	5750	2260	390	397	276	482	282	380	270	103	390
2	131	2960	4080	373	575	258	446	279	425	255	100	494
3	124	1320	2600	570	984	247	418	285	462	240	98	318
4	119	935	1550	1320	756	242	404	276	490	240	95	366
5	115	744	1160	1300	675	232	418	250	498	225	92	294
6	113	736	1860	928	900	235	394	235	462	222	90	232
7	123	907	1580	1360	970	762	366	227	432	225	87	205
8	119	670	1120	2260	1100	700	345	232	415	222	85	189
9	119	1220	928	1260	921	490	327	276	510	210	82	554
10	111	2050	3040	970	720	415	324	303	446	201	84	732
11	106	1340	5040	810	615	387	333	380	394	195	92	498
12	104	1320	3130	690	538	352	303	394	394	183	128	376
13	124	1910	3530	625	490	336	294	600	450	179	113	336
14	111	3460	3570	635	466	318	279	1170	429	179	100	306
15	103	1710	2140	610	436	303	282	810	376	177	153	285
16	102	1270	1510	558	404	291	315	605	342	173	122	282
17	98	1000	1180	522	380	285	300	506	312	165	102	297
18	95	828	998	478	373	279	294	458	333	157	92	252
19	95	705	852	450	394	276	336	443	348	149	107	225
20	92	615	756	422	404	261	366	482	336	145	103	212
21	92	554	695	620	401	255	366	502	342	142	92	294
22	93	510	645	625	397	264	422	411	342	136	90	715
23	561	498	595	526	418	366	394	362	306	133	87	786
24	720	575	546	482	383	640	369	333	276	130	151	502
25	1110	3140	518	494	355	1730	362	312	267	125	333	401
26	836	2740	478	498	327	1000	369	321	264	135	362	339
27	546	1540	446	446	306	991	369	429	273	136	199	306
28	651	1480	450	425	297	894	352	490	303	122	159	276
29	1060	2140	546	401	---	695	324	404	315	114	135	261
30	1810	1210	466	376	---	605	303	352	297	109	120	261
31	1040	---	418	369	---	534	---	342	---	105	147	---
TOTAL	10760	45839	48679	21793	15382	14919	10656	12751	11219	5399	3903	10984
MEAN	347	1528	1570	703	549	481	355	411	374	174	126	366
MAX	1810	5750	5040	2260	1100	1730	482	1170	510	270	362	786
MIN	92	498	418	369	297	232	279	227	264	105	82	189
CFSM	4.14	18.2	18.7	8.39	6.55	5.74	4.24	4.91	4.46	2.08	1.50	4.37
IN.	4.78	20.35	21.61	9.67	6.83	6.62	4.73	5.66	4.98	2.40	1.73	4.88
AC-FT	21340	90920	96550	43230	30510	29590	21140	25290	22250	10710	7740	21790

CAL YR 1977 TOTAL 215463 MEAN 590 MAX 5750 MIN 79 CFSM 7.04 IN 95.65 AC-FT 427400
WTR YR 1978 TOTAL 212284 MEAN 582 MAX 5750 MIN 82 CFSM 6.95 IN 94.23 AC-FT 421100

12042500 SOLEDUCK RIVER NEAR QUILLLAYUTE, WA

LOCATION.--Lat 47°57'05", long 124°27'58", in NW¼NE¼ sec.11, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, on left bank 15 ft (4.6 m) upstream from county bridge, 3.9 mi (6.3 km) west of Forks, and at mile 13.9 (22.4 km).

DRAINAGE AREA.--219 mi^2 (567 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1897 to March 1900, January 1901 to December 1901, October 1977 to September 1978. November 1897 and peak discharges for 1898-1900, published in WSP 1316.

REVISED RECORDS.--WSP 1316: Drainage area, 1899.

GAGE.--Water-stage recorder. Altitude of gage is 150 ft (46 m) from topographic map. Prior to Dec. 31, 1901, nonrecording gage at different datum.

REMARKS.--Water-discharge records excellent except those above 10,000 ft^3/s (283 m^3/s), which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft^3/s (589 m^3/s) Nov. 1, 1977, gage height, 15.77 ft (4.807 m), from rating curve extended above 6,700 ft^3/s (190 m^3/s); minimum discharge observed, 155 ft^3/s (4.39 m^3/s) Oct. 16, 17, 1901.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 11,000 ft^3/s (312 m^3/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	2300	*20,800	589	*15.77	4.807	Dec. 2	1145	12,400	351	12.41	3.783
Nov. 25	2345	11,500	326	11.98	3.652						

Minimum discharge, 209 ft^3/s (5.92 m^3/s) Aug. 10, gage height, 2.09 ft (0.637 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	6790	4810	1080	976	728	1100	674	659	448	235	410
2	360	9070	10500	1030	1240	693	1040	645	685	426	232	910
3	340	3720	7430	1100	2160	663	970	636	705	412	229	715
4	320	2540	4950	2090	2140	643	925	631	728	400	226	729
5	310	2020	3570	2570	1740	627	1030	604	737	395	223	661
6	300	1760	3790	2180	1910	625	1110	569	712	382	221	543
7	330	2080	4430	2450	2160	1010	981	544	667	376	218	465
8	320	1780	3230	5360	2670	1650	907	529	641	375	216	427
9	320	1900	2640	3410	2430	1180	845	537	647	369	213	753
10	300	4000	3790	2530	2040	1000	805	569	781	367	212	1670
11	290	3320	9250	2130	1740	932	797	641	651	357	224	1470
12	270	2990	7190	1840	1530	869	749	809	628	344	251	1180
13	280	3840	6270	1650	1380	834	744	892	673	327	258	971
14	284	7780	8190	1630	1300	818	730	2220	750	320	249	875
15	273	4790	5460	1600	1300	797	742	2000	672	316	294	763
16	273	3590	4240	1480	1190	752	816	1440	612	313	306	728
17	265	2940	3300	1400	1110	722	820	1170	577	310	262	739
18	258	2440	2750	1300	1050	697	835	1030	550	301	241	674
19	256	2080	2390	1240	1030	674	888	940	555	291	235	608
20	252	1810	2120	1160	1020	651	973	901	550	283	244	566
21	256	1620	1930	1290	1010	631	944	902	536	278	236	567
22	256	1460	1770	1730	970	619	1100	864	541	273	227	987
23	581	1370	1620	1560	964	649	1100	783	523	268	227	1850
24	1050	1440	1480	1380	941	1010	997	717	489	265	261	1290
25	1840	3670	1380	1280	891	2770	919	683	464	261	318	1010
26	1660	7350	1290	1270	832	2100	869	684	460	258	597	851
27	1170	3810	1210	1200	791	1840	839	756	448	265	492	767
28	1050	3780	1190	1120	761	1870	805	914	453	264	367	690
29	1950	5230	1400	1060	---	1550	760	834	469	251	317	643
30	3480	3480	1290	1000	---	1340	714	734	467	243	286	615
31	2810	---	1160	956	---	1200	---	676	---	239	275	---
TOTAL	22084	104350	116020	53076	39276	32144	26854	26528	18030	9977	8392	25127
MEAN	712	3478	3743	1712	1403	1037	895	856	601	322	271	838
MAX	3480	9070	10500	5360	2670	2770	1110	2220	781	448	597	1850
MIN	252	1370	1160	956	761	619	714	529	448	239	212	410
AC-FT	43800	207000	230100	105300	77900	63760	53260	52620	35760	19790	16650	49840

WTR YR 1978 TOTAL 481850 MEAN 1320 MAX 10500 MIN 212 AC-FT 955800

QUILLAYUTE RIVER BASIN

12042503 SOLEDUCK RIVER AT MOUTH NEAR LA PUSH, WASH

WATER-QUALITY RECORDS

LOCATION.--Lat 47°54'55", long 124°32'27", in NW¼SE¼ sec.20, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, at road bridge, 0.1 mi (0.2 km) upstream from mouth and 4.4 mi (7.1 km) east of La Push.

DRAINAGE AREA.--226 mi² (585 km²).

PERIOD OF RECORD.--December 1976 to September 1978 (discontinued).

WATER QUALITY DATA, DECEMBER 1976 TO SEPTMEBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
DEC , 1976						
13...	1530	960	7.7	--	7	18
FEB , 1977						
13...	1200	2970	5.6	--	27	217
18...	1445	3790	5.0	--	35	358
23...	1130	2630	7.5	--	26	185
25...	1230	2450	3.9	--	12	79
27...	1215	2130	4.4	--	15	86
MAR						
01...	1500	1060	6.2	--	4	11
02...	1010	1660	6.0	--	3	13
10...	1200	1660	7.0	--	30	134
31...	1530	1180	6.0	--	1	3.2
APR						
08...	1510	1460	9.0	--	3	12
14...	1240	1150	7.0	--	1	3.1
20...	1620	910	8.5	--	2	4.9
MAY						
04...	1430	1400	9.0	--	3	11
05...	1530	1220	9.5	--	4	13
10...	1450	910	10.5	--	22	54
13...	1610	800	11.0	--	2	4.3
16...	1055	775	10.5	--	2	4.2
25...	1750	700	11.0	--	2	3.8
27...	1240	825	9.0	--	7	16
31...	1400	775	10.5	--	13	27
JUN						
01...	1650	1280	11.5	--	8	28
07...	1230	1360	12.5	1	1	3.7
15...	1200	710	12.0	1	7	13
23...	1635	530	14.0	1	5	7.2
SEP						
20...	1000	755	11.0	6	12	24
21...	0930	[illegible]	11.0	3	10	24
22...	1035	582	11.0	2	6	9.4
OCT , 1977						
24...	1200	964	11.0	2	13	34
25...	1000	1870	9.0	2	45	227
26...	1600	1570	9.6	3	9	38
28...	1250	970	9.0	2	9	24
31...	1400	2640	8.0	3	28	200
NOV						
01...	1300	3290	7.0	1	60	533
01...	1545	5580	10.0	2	204	3070
07...	1315	2240	8.0	5	90	544
10...	1115	4430	8.0	2	108	1290
11...	1150	3200	8.0	7	42	363
15...	1230	4640	9.0	5	80	1000
21...	1520	1590	3.0	1	9	39
28...	1040	3790	7.0	4	43	440
29...	1000	6410	7.0	9	312	5400
DEC						
01...	1200	3910	--	5	111	1170
04...	--	4950	--	--	163	2180
04...	1050	5070	7.2	--	170	2330
06...	1100	3560	6.1	2	47	452
09...	1430	2610	4.0	2	16	113
12...	1345	7230	--	13	155	3030
19...	1300	2370	7.0	1	14	90
30...	1200	1280	5.0	1	7	24

12042503 SOLEDUCK RIVER AT MOUTH NEAR LA PUSH, WASH--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
JAN , 1978						
03...	1120	1060	4.1	1	14	40
06...	1530	2090	5.0	4	11	62
10...	1020	2550	6.0	5	20	138
MAY						
08...	1015	530	12.0	2	1	1.4
10...	1500	566	11.0	2	2	3.1
15...	1200	1970	--	5	17	90
17...	1410	1160	11.0	3	16	50
23...	1020	795	10.0	3	1	2.1
25...	1415	680	11.0	2	6	11
26...	1250	670	--	2	1	1.8
JUN						
01...	1145	646	14.8	1	0	.00
07...	1515	670	17.9	1	1	1.8
12...	1600	634	13.0	3	0	.00
13...	1150	680	12.5	2	1	1.8
14...	1100	780	--	2	10	21
23...	1515	514	16.0	--	4	5.6
SEP						
06...	1120	546	14.0	1	4	5.9
12...	--	1180	--	--	11	35
13...	1100	970	--	2	8	21
18...	1455	660	13.0	1	3	5.3
20...	0955	566	14.0	1	3	4.6
22...	1050	976	12.5	1	4	11
25...	1050	1020	14.0	2	6	17
28...	0930	690	13.0	--	5	9.3
29...	0750	646	12.0	--	4	7.0

12042800 BOGACHIEL RIVER NEAR FORKS, WA

LOCATION.--Lat 47°53'40", long 124°21'19", in NE¼NE¼ sec.34, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on right bank 50 ft (15 m) downstream from U.S. Highway 101, 0.6 mi (1.0 km) downstream from Bear Creek, 4.2 mi (6.8 km) southeast of Forks, and at mile 15.3 (24.6 km).

DRAINAGE AREA.--111 mi² (287 km²).

PERIOD OF RECORD.--April 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 170 ft (52 m), from topographic map.

REMARKS.--Records good except those above 8,000 ft³/s (227 m³/s) and those for periods Oct. 1-19, Dec. 10 to Jan. 17, Mar. 25 to Apr. 4, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s (674 m³/s) Dec. 2, 1975, gage height, 15.81 ft (4.819 m) from rating curve extended above 6,000 ft³/s (170 m³/s) on basis of step-backwater analysis; minimum, 83 ft³/s (2.35 m³/s) Aug. 10, 1978, gage height, 7.61 ft (2.320 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 11,000 ft³/s (312 m³/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1800	*23,000	651	*15.68	4.779	Nov. 25	1800	12,800	362	13.82	4.212
Nov. 14	0500	13,400	379	13.94	4.249	Dec. 2	0600	14,200	402	14.09	4.295

Minimum discharge, 83 ft³/s (2.35 m³/s) Aug. 10, gage height, 7.61 ft (2.320 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	11000	6490	461	614	317	510	348	463	188	96	1120
2	245	5600	9500	419	1270	296	489	328	446	180	94	1620
3	230	2460	5220	1220	2370	283	468	326	427	175	92	993
4	215	1580	2960	2710	1550	272	558	323	385	170	91	957
5	205	1140	2020	2310	1120	269	976	317	362	167	90	750
6	205	1380	3340	1540	1350	304	873	283	322	164	89	550
7	210	1610	2790	3010	2250	1370	642	265	290	164	88	468
8	212	1060	1750	4480	2700	1180	553	259	280	161	87	411
9	208	3010	1340	2100	2080	700	489	261	383	157	86	1630
10	188	4990	5980	1490	1420	550	456	280	434	157	85	2570
11	180	2900	7180	1230	1080	494	446	520	349	160	127	2220
12	186	2620	5120	1090	875	437	393	559	362	151	309	1270
13	190	3870	6170	813	745	466	398	1070	557	143	179	975
14	176	7680	5870	993	766	460	400	3150	615	140	150	750
15	170	2920	3540	876	812	432	447	1790	472	134	364	630
16	170	2210	2550	759	680	389	566	1150	381	134	242	590
17	162	1610	1820	718	590	364	547	863	331	131	175	670
18	160	1230	1420	630	547	344	637	700	303	127	152	510
19	158	980	1170	594	541	330	730	658	283	122	182	440
20	154	797	975	539	518	312	936	591	267	121	176	399
21	169	679	867	1210	491	300	873	554	254	118	152	610
22	191	589	759	1220	455	286	1260	492	245	116	140	1620
23	1430	594	662	912	481	392	975	455	231	113	143	1600
24	1440	742	590	770	431	1340	768	411	225	111	410	1010
25	1870	5890	534	688	433	3390	670	370	219	110	649	750
26	1470	4220	482	692	388	1460	574	545	212	110	1270	646
27	986	3030	440	609	358	1520	518	1070	207	127	566	566
28	1410	3530	574	540	340	1200	468	982	203	114	419	501
29	2770	4780	930	499	---	939	405	704	201	108	322	475
30	4940	2150	654	465	---	710	383	579	195	103	265	482
31	2530	---	526	433	---	586	---	500	---	98	312	---
TOTAL	23095	86851	84223	36020	27255	21692	18408	20703	9904	4274	7602	27783
MEAN	745	2895	2717	1162	973	700	614	668	330	138	245	926
MAX	4940	11000	9500	4480	2700	3390	1260	3150	615	188	1270	2570
MIN	154	589	440	419	340	269	383	259	195	98	85	399
CFSM	6.71	26.1	24.5	10.5	8.77	6.31	5.53	6.02	2.97	1.24	2.21	8.34
IN.	7.74	29.11	28.23	12.07	9.13	7.27	6.17	6.94	3.32	1.43	2.55	9.31
AC-FT	45810	172300	167100	71450	54060	43030	36510	41060	19640	8480	15080	55110

CAL YR 1977 TOTAL 391550 MEAN 1073 MAX 11000 MIN 92 CFSM 9.67 IN 131.22 AC-FT 776600
WTR YR 1978 TOTAL 367810 MEAN 1008 MAX 11000 MIN 85 CFSM 9.08 IN 123.26 AC-FT 729600

12043000 CALAWAH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°57'37", long 124°23'30", in NW¼SW¼ sec.4, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on left bank 30 ft (9 m) downstream from U.S. Highway 101 bridge, 0.8 mi (1.3 km) northwest of Forks, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--129 m^2 (334 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1897 to December 1901, October to December 1975 (discharge measurements and peak discharges), January 1976 to current year. Monthly and peak discharge only, November 1897 and August 1898, published in WSP 1316. Published as Calowa River at Forks, November 1897 to December 1899; as Calowa River near Forks, 1900; and as Kalawa River near Forks, 1901.

REVISED RECORDS.--WSP 1316: 1898-1902. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 201.58 ft (61.442 m) National Geodetic Vertical Datum of 1929. November 1897 to December 1901, nonrecording gage at same site but at different datum; October to December 1975, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--5 years (water years 1899-1901, 1977-78), 1,073 ft^3/s (30.39 m^3/s), 112.96 in/yr (2,869 mm/yr) 777,400 acre-ft/yr (959 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft^3/s (640 m^3/s) Dec. 2, 1975, gage height, 16.99 ft (5.179 m), from rating curve extended above 6,000 ft^3/s (170 m^3/s) on basis of step-backwater analysis; maximum gage height, 17.2 ft (5.24 m), from graph based on gage readings, Nov. 18, 1897; minimum, 15 ft^3/s (0.42 m^3/s) Sept. 28, 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft^3/s (283 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	1700	*22,400	634	*16.93	5.160	Nov. 25	1800	10,600	300	12.41	3.783
Nov. 14	0400	16,200	459	14.79	4.508	Dec. 2	0800	14,000	396	13.89	4.234

Minimum discharge, 90 ft^3/s (2.55 m^3/s) Aug. 9, 10, gage height, 2.67 ft (0.814 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	9460	5000	545	590	364	625	384	428	167	96	670
2	229	4830	10100	505	1150	344	585	364	388	160	95	1220
3	214	2350	5570	778	2370	328	535	344	356	157	94	760
4	202	1570	3200	2180	1790	316	530	344	328	152	93	766
5	190	1190	2120	2130	1300	306	784	313	306	150	93	600
6	187	1150	2750	1590	1340	332	838	295	288	145	93	460
7	196	1350	2820	2870	2220	1500	685	281	274	140	92	376
8	196	1080	1880	4730	2940	1450	605	267	260	138	92	332
9	199	1990	1450	2310	2200	904	540	260	344	138	91	1270
10	175	3640	3810	1610	1620	715	495	257	356	145	92	2280
11	165	2510	6710	1290	1270	630	472	388	302	142	102	1500
12	162	2460	5250	1060	1030	550	428	416	316	134	217	1060
13	182	3630	5190	934	862	540	428	892	424	128	112	856
14	162	8800	5700	970	832	525	420	3060	448	124	103	705
15	155	3150	3430	898	832	520	440	1910	396	122	253	610
16	165	2310	2680	832	760	480	530	1240	348	120	165	580
17	150	1890	1980	766	695	456	525	904	316	120	122	590
18	145	1480	1550	695	655	428	610	720	292	117	109	495
19	145	1200	1270	660	630	400	690	600	271	114	124	440
20	138	976	1070	600	585	376	832	520	253	111	120	408
21	145	838	928	1040	550	356	838	460	241	109	109	495
22	160	742	820	1440	505	336	1230	440	235	108	104	1430
23	1260	715	730	1100	510	384	1100	408	223	105	106	1840
24	1460	790	665	898	468	904	874	396	214	104	285	1130
25	1880	4280	610	796	460	3570	725	388	205	103	428	814
26	1400	3930	560	784	424	1640	620	485	199	103	814	655
27	916	2590	520	695	400	1370	550	720	187	104	432	595
28	1430	3150	575	635	384	1230	490	760	182	103	292	500
29	2570	4480	808	580	---	994	448	650	175	100	226	460
30	4410	2330	665	525	---	820	416	550	170	99	187	452
31	2260	---	590	505	---	705	---	476	---	97	205	---
TOTAL	21495	80867	81001	36951	29372	23773	18888	19492	8725	3859	5546	24349
MEAN	693	2696	2613	1192	1049	767	630	629	291	124	179	812
MAX	4410	9460	10100	4730	2940	3570	1230	3060	448	167	814	2280
MIN	138	715	520	505	384	306	416	257	170	97	91	332
CFSM	5.37	20.9	20.3	9.24	8.13	5.95	4.88	4.88	2.26	.96	1.39	6.30
IN.	6.20	23.32	23.36	10.66	8.47	6.86	5.45	5.62	2.52	1.11	1.60	7.02
AC-FT	42640	160400	160700	73290	58260	47150	37460	38660	17310	7650	11000	48300

CAL YR 1977 TOTAL 367007 MEAN 1005 MAX 10100 MIN 92 CFSM 7.79 IN 105.83 AC-FT 728000
WTR YR 1978 TOTAL 354318 MEAN 971 MAX 10100 MIN 91 CFSM 7.53 IN 102.17 AC-FT 702800

12043000 CALAWAH RIVER NEAR FORKS, WASH--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to September 1978 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1976					
27...	--	480	--	1	1.3
DEC					
08...	1100	2320	--	61	382
09...	1100	1410	7.0	4	15
14...	0730	690	7.2	1	1.9
16...	1330	916	9.0	1	2.5
20...	1100	832	--	1	2.2
22...	1400	600	7.0	1	1.6
28...	1030	1798	7.0	2	9.7
30...	1430	946	6.0	4	10
JAN , 1977					
05...	1130	452	4.0	3	3.7
17...	1600	1410	6.0	18	69
18...	1400	6040	7.0	158	2580
20...	1500	1307	6.5	1	3.5
31...	1455	1006	6.0	14	38
FEB					
04...	1200	464	6.0	1	1.3
09...	1125	416	8.0	1	1.1
10...	--	1610	6.0	29	126
11...	1345	1405	6.5	5	19
15...	1400	856	6.5	0	.00
16...	1405	850	--	1	2.3
17...	--	1150	8.0	25	78
22...	1330	5610	--	142	2150
23...	1030	2920	7.0	53	418
25...	1145	1360	3.3	24	88
25...	1540	1690	6.5	23	105
27...	1115	2090	4.4	35	198
MAR					
01...	1600	1310	7.0	2	7.1
02...	1055	1130	6.5	6	18
10...	1020	2920	--	23	181
16...	1400	856	7.0	7	16

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
MAR , 1977						
31...	1445	874	6.5	--	9	21
APR						
08...	1430	886	8.5	--	22	53
14...	1120	868	6.0	--	5	12
20...	1515	680	8.5	--	6	9.7
27...	1215	590	9.0	--	4	6.4
MAY						
04...	1340	976	8.5	--	10	26
05...	1345	946	8.0	--	2	5.1
10...	1325	460	10.5	--	5	6.2
13...	1540	505	10.0	--	16	22
16...	1000	448	10.0	--	7	8.5
26...	1500	600	10.0	--	3	4.9
27...	1115	525	7.0	--	4	5.7
27...	1530	747	8.0	--	5	10
31...	1320	690	10.0	--	4	7.5
JUN						
01...	1610	880	11.0	--	4	9.5
07...	1145	505	10.5	1	4	5.5
08...	1230	472	14.0	1	5	6.4
JUL						
08...	1405	1555	13.5	1	2	8.4
SEP						
20...	1115	1120	12.0	5	15	45
20...	1430	1060	13.0	3	10	29
20...	1845	1020	13.0	2	6	17
21...	0835	802	10.0	2	6	13
21...	1055	747	11.0	2	9	18
22...	0950	490	10.0	1	7	9.3
22...	1810	452	11.0	1	5	6.1
23...	0900	416	10.0	8	2	2.2
OCT						
24...	1345	1270	10.0	1	6	21
25...	1045	1610	9.0	2	11	48

12043000 CALAWAH RIVER NEAR FORKS, WASH--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1977						
25...	1155	1580	9.0	2	11	47
26...	1520	1310	10.0	1	13	46
28...	1250	1380	9.0	1	9	34
31...	1145	2180	8.0	2	12	71
NOV						
01...	1330	12500	9.0	5	1130	38100
04...	1115	1570	8.0	--	2	8.5
07...	1200	1340	8.0	3	15	54
10...	0950	3490	9.0	2	107	1010
10...	1330	3570	9.0	1	100	964
11...	1115	2290	8.0	4	33	204
14...	1135	8250	--	2	1080	24100
15...	1030	3120	8.0	4	192	1620
21...	1420	832	4.0	4	5	11
28...	1010	3020	7.0	3	163	1330
29...	0920	4820	8.0	1	30	390
DEC						
01...	1330	5420	9.0	9	693	10100
04...	0735	3440	--	--	156	1450
06...	1030	2480	--	2	66	442
07...	1550	2560	2.2	--	42	299
09...	1345	1420	5.0	1	19	73
12...	1200	5010	7.0	8	179	2420
19...	1230	1260	7.0	1	14	48
28...	1630	555	7.0	--	12	18
JAN , 1978						
03...	1050	650	4.1	1	5	8.8
06...	1250	1550	5.0	2	18	75
10...	1050	1630	8.0	5	11	48
MAY						
12...	1030	420	9.0	1	2	2.3
15...	1140	1890	--	3	10	51
23...	0945	404	8.5	2	2	2.2
26...	1215	420	10.0	3	11	12

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
MAY , 1978						
27...	1115	660	8.0	--	13	23
31...	1315	476	--	1	2	2.6
JUN						
13...	1040	408	11.0	2	2	2.2
14...	1010	452	9.0	1	0	.00
SEP						
06...	1045	464	12.0	1	0	.00
11...	--	1500	14.0	1	0	.00
13...	1000	856	12.0	1	0	.00
18...	1400	490	11.5	7	0	.00
20...	0910	412	14.0	1	1	1.1
22...	1000	934	10.5	1	3	7.6
25...	1000	820	11.0	1	2	4.4
26...	--	655	11.0	1	2	3.5
28...	0830	510	12.0	--	2	2.8
28...	1615	495	11.9	--	1	1.3

QUILLAYUTE RIVER BASIN

12043015 BOGACHIEL RIVER NEAR LA PUSH, WASH

LOCATION.--Lat 47°54'11", long 124°32'39", in SE¼NW¼ sec.29, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, at La Push Highway bridge 0.8 mi (1.3 km) upstream from Soleduck River and 4.2 mi (6.8 km) east of La Push.

DRAINAGE AREA.--226 mi² (585 km²).

PERIOD OF RECORD.--November 1976 to September 1978 (discontinued).

WATER QUALITY DATA NOVEMBER 1976 TO SEPTEMBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
NOV , 1976					
01...	1500	2530	--	10	68
17...	--	6130	--	705	11700
DEC					
09...	1400	2940	7.5	33	262
16...	1200	2380	11.0	8	51
20...	1130	2000	7.0	6	32
28...	1145	4170	6.0	34	383
30...	1530	2250	6.0	13	79
JAN , 1977					
17...	1500	3270	7.0	82	724
18...	1600	12500	7.0	323	10900
20...	1600	3230	6.0	10	87
FEB					
10...	--	4110	--	62	688
11...	1515	3440	6.0	21	195
16...	--	2110	--	9	51
17...	1330	3270	8.0	20	177
22...	1030	13900	8.0	357	13400
23...	1145	5850	7.0	85	1340
25...	1240	2930	3.5	20	158
25...	1540	3980	6.5	80	860
27...	1400	4950	4.0	6	80
28...	1520	3940	7.0	10	106
MAR					
01...	1440	3190	6.1	16	138
02...	1130	2560	6.0	5	35
08...	1400	10200	6.0	182	5010
09...	1505	9680	5.5	60	1570
10...	1210	5850	6.5	33	521
APR					
08...	1525	2330	9.0	4	25
MAY					
04...	1445	2500	9.0	7	47
05...	--	2290	--	8	49

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
JUN , 1977						
01...	1700	2270	11.5	--	9	55
SEP						
20...	0950	3310	11.5	7	69	617
20...	1505	2960	14.0	11	28	224
20...	1725	2930	14.0	5	30	237
21...	0930	2010	11.0	3	9	49
OCT						
25...	0945	3820	10.0	3	24	248
25...	1255	3690	11.0	5	21	209
26...	1655	3220	12.0	2	8	70
28...	1300	2220	9.0	5	29	174
31...	1415	5300	9.0	4	32	458
NOV						
10...	1125	9290	9.0	3	287	7200
11...	--	6220	--	2	63	1060
14...	1120	21500	--	2	1240	72000
14...	1415	16600	--	3	792	35500
15...	1245	6900	9.0	6	139	2590
28...	0945	7300	8.0	5	124	2440
29...	1000	11800	7.0	2	521	16600
DEC						
01...	1030	6600	8.0	6	121	2160
03...	1250	13300	6.6	--	307	11000
04...	1000	7620	7.5	--	289	5950
06...	--	7000	--	4	95	1800
09...	1545	3090	--	3	27	225
12...	1400	10900	--	12	231	6800
19...	1315	2790	7.0	1	16	121
JAN , 1978						
06...	1515	3480	5.0	3	14	132
10...	1010	3670	8.0	4	17	168
MAY						
17...	1445	2010	12.0	3	4	22
SEP						
13...	1115	2370	14.0	2	4	26
22...	1100	2510	13.0	3	7	47

12043100 DICKEY RIVER NEAR LA PUSH, WA

LOCATION.--Lat 47°57'53", long 124°32'53", in NE¼NE¼ sec.6, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, on left bank 1.0 mi (1.6 km) upstream from Colby Creek, 5.5 mi (8.8 km) northeast of La Push and at mile 6.0 (9.7 km).

DRAINAGE AREA.--86.3 mi^2 (223.5 km^2).

PERIOD OF RECORD.--August 1962 to September 1973, water years 1974-76 (annual maximum), October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--13 years (water years 1963-73, 1977-78), 542 ft^3/s (15.35 m^3/s), 85.29 in/yr (2,166 mm/yr), 392,700 acre-ft/yr (484 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,300 ft^3/s (490 m^3/s) Jan. 19, 1968, gage height, 22.15 ft (6.751 m) from high-water mark in well, from rating curve extended above 4,900 ft^3/s (139 m^3/s) on basis of slope-area measurement of peak flow; minimum, 8.9 ft^3/s (0.25 m^3/s) Aug. 29, 30, 31, 1967, gage height, 0.79 ft (0.241 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 5,000 ft^3/s (142 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 14	0600	*7,210	204	*12.66	3.859	Dec. 2	0800	6,790	192	12.19	3.716
Nov. 25	1800	5,580	158	10.82	3.298						

Minimum discharge, 17 ft^3/s (0.48 m^3/s) Aug. 9, 10, gage height, 0.95 ft (0.290 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	2590	3340	265	357	150	314	160	140	52	22	408
2	120	1940	4970	230	675	140	303	155	125	49	22	1090
3	110	972	2580	466	1100	130	281	145	111	47	21	752
4	105	670	1540	831	767	125	267	136	103	45	21	943
5	100	543	1000	801	540	120	416	125	92	44	21	568
6	95	792	1380	616	600	130	515	111	85	42	19	398
7	110	1130	1200	1670	1300	420	346	103	77	41	18	312
8	140	633	788	2230	1200	713	296	96	71	41	18	265
9	150	1780	620	1060	940	525	259	94	96	41	18	747
10	120	3230	2080	698	664	374	230	94	133	45	18	1840
11	100	1650	2310	537	500	359	224	180	105	51	35	1740
12	88	1550	1780	440	380	321	192	210	90	47	201	963
13	98	1510	2280	390	320	322	221	360	136	41	114	695
14	88	4900	2320	552	330	322	263	1030	602	37	92	578
15	81	1700	1580	497	420	312	352	578	382	35	452	459
16	106	1220	1320	436	410	256	455	382	246	34	246	408
17	95	921	837	454	320	222	372	303	192	34	145	446
18	83	716	647	358	270	198	481	252	157	34	111	329
19	81	548	566	386	260	183	602	213	133	32	98	267
20	77	445	467	339	240	162	517	186	118	31	96	231
21	128	370	390	745	280	152	431	160	105	29	81	258
22	204	317	340	748	260	140	673	157	100	27	67	735
23	993	307	297	515	240	160	577	152	92	26	86	778
24	1020	457	260	410	210	324	401	136	83	25	375	475
25	1110	2610	230	353	230	1640	326	127	79	25	286	368
26	834	1820	205	354	200	648	280	183	77	25	581	303
27	620	1330	184	316	180	1060	251	354	69	25	331	278
28	614	1830	258	276	160	801	222	330	64	25	234	245
29	1320	2560	749	248	---	586	195	252	58	25	181	243
30	1850	1060	412	221	---	456	180	198	54	24	143	234
31	1030	---	313	209	---	367	---	162	---	22	136	---
TOTAL	11800	42101	37243	17651	13353	11818	10442	7124	3975	1101	4289	17356
MEAN	381	1403	1201	569	477	381	348	230	133	35.5	138	579
MAX	1850	4900	4970	2230	1300	1640	673	1030	602	52	581	1840
MIN	77	307	184	209	160	120	180	94	54	22	18	231
CFSM	4.42	16.3	13.9	6.59	5.53	4.42	4.03	2.67	1.54	.41	1.60	6.71
IN.	5.09	18.15	16.05	7.61	5.76	5.09	4.50	3.07	1.71	.47	1.85	7.48
AC-FT	23410	83510	73870	35010	26490	23440	20710	14130	7880	2180	8510	34430

CAL YR 1977 TOTAL 180840 MEAN 495 MAX 4970 MIN 17 CFSM 5.74 IN 77.95 AC-FT 358700
WTR YR 1978 TOTAL 178253 MEAN 488 MAX 4970 MIN 18 CFSM 5.66 IN 76.84 AC-FT 353600

12043101 DICKEY RIVER ABOVE COLBY CREEK NEAR LA PUSH, WASH

LOCATION.--Lat 47°57'24", long 124°33'32", in SE¼SW¼ sec.6, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, 0.1 mi (0.2 km) above Colby Creek, 4.8 mi (7.7 km) northeast of La Push.

DRAINAGE AREA.--86.3 mi² (223.5 km²).

PERIOD OF RECORD.--December 1976 to September 1978 (discontinued).

WATER QUALITY DATA DECEMBER 1976 TO SEPTEMBER 1978

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)
DEC , 1976						
08...	1400	1275	--	--	72	248
09...	1100	585	8.0	--	30	47
16...	1130	728	9.0	--	6	12
28...	1100	788	7.0	--	11	23
JAN , 1977						
17...	1630	2870	--	--	69	535
18...	1430	2110	8.0	--	270	1540
20...	1500	654	6.0	--	14	25
31...	1520	1050	6.0	--	163	462
FEB						
10...	--	813	4.5	--	68	149
11...	1410	756	6.5	--	23	47
12...	1330	2250	6.1	--	222	1350
17...	1400	860	8.0	--	72	167
22...	--	2140	8.0	--	108	624
25...	1430	945	3.9	--	42	107
27...	1430	1170	3.3	--	9	28
MAR						
01...	1530	724	7.2	--	10	20
09...	1445	2320	6.0	--	127	796
MAY						
27...	1600	529	9.5	--	42	60
OCT						
24...	1210	660	13.0	5	22	39
25...	1015	985	11.0	5	17	45
25...	1230	1010	11.0	3	18	49
26...	1600	816	12.0	4	16	35
27...	1330	596	10.0	--	14	23
31...	1330	995	8.0	2	11	30
NOV						
01...	1345	3020	10.0	2	220	1790
01...	1530	3340	10.0	3	466	4200
07...	1300	990	8.0	5	55	147
10...	1100	2850	10.0	2	117	900
11...	1140	1350	9.0	1	76	277
14...	1530	4900	--	1	222	2940
15...	1220	1620	9.0	4	70	306
28...	1020	1530	8.0	4	29	120
DEC						
01...	1350	4830	--	1	361	4710
04...	1120	1570	7.2	--	119	504
06...	1100	1410	6.7	5	83	316
07...	1615	1070	2.8	--	33	95
09...	1410	603	4.0	2	25	41
29...	1430	668	--	--	29	52
JAN , 1978						
06...	1200	596	5.0	5	14	23
10...	1300	684	7.5	5	15	28
MAY						
15...	1145	564	--	4	10	15
SEP						
12...	1030	960	15.0	--	71	184
13...	1030	664	--	3	15	27

12043150 OZETTE RIVER AT OZETTE, WA

LOCATION.--Lat 48°09'13", long 124°40'04", in NE¼NE¼ sec.31, T.31 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank, 50 ft (15 m) west of Ozette Ranger station, 75 ft (23 m) upstream from foot bridge, 250 ft (76 m) downstream from Ozette Lake and 3 mi (4.8 km) southeast of Cape Alava.

DRAINAGE AREA.--77.5 mi² (200.7 km²).

PERIOD OF RECORD.--August 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m) from topographic map.

REMARKS.--Records good. Flow affected by natural regulation from Ozette Lake. No diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft³/s (42.5 m³/s) Dec. 3, 1977, gage height, 38.50 ft (11.74 m); minimum, 32 ft³/s (0.91 m³/s) Aug. 22, 1977, gage height, 31.40 ft (9.571 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,500 ft³/s (42.5 m³/s) Dec. 3, gage height, 38.50 ft (11.74 m); minimum, 41 ft³/s (1.16 m³/s) Aug. 9, gage height, 31.43 ft (9.580 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	539	1160	678	475	380	449	319	265	140	55	180
2	159	621	1410	647	491	363	439	309	255	134	53	215
3	154	629	1490	636	526	349	428	297	248	129	51	271
4	149	618	1460	656	546	335	422	285	241	124	50	305
5	145	610	1410	669	544	321	431	273	232	120	48	315
6	143	614	1370	662	541	317	445	263	226	115	47	313
7	143	656	1340	693	581	353	439	253	215	113	46	309
8	143	651	1290	797	649	391	428	244	206	108	45	303
9	143	678	1230	816	673	403	416	239	206	106	44	333
10	141	810	1230	801	671	401	403	232	199	105	44	414
11	138	863	1260	777	654	399	391	233	196	102	47	449
12	135	896	1260	748	634	393	378	232	188	99	54	467
13	134	926	1290	722	610	391	370	253	187	96	54	471
14	131	1070	1350	709	594	386	365	309	217	93	59	471
15	128	1110	1370	698	588	378	372	337	232	90	79	462
16	129	1090	1350	680	577	370	380	337	232	88	85	452
17	127	1060	1300	671	559	357	382	329	224	85	87	443
18	125	1020	1250	651	541	347	393	321	223	82	87	431
19	124	977	1200	636	522	335	410	313	215	80	85	416
20	121	931	1140	616	504	325	414	303	208	77	85	401
21	125	882	1080	632	491	315	412	293	203	75	84	395
22	134	838	1020	645	478	305	416	285	194	73	84	403
23	180	803	970	636	462	301	414	279	187	71	88	412
24	224	777	917	618	449	311	403	269	180	69	108	408
25	269	825	880	599	439	393	393	263	175	67	131	399
26	307	950	836	581	424	412	380	265	169	66	157	391
27	323	967	792	561	410	445	370	283	162	65	169	382
28	335	1020	761	539	395	478	355	293	157	62	172	371
29	370	1120	764	519	---	482	343	289	154	60	170	359
30	428	1110	742	500	---	475	333	283	146	58	169	354
31	462	---	709	480	---	462	---	273	---	56	172	---
TOTAL	5933	25661	35631	20273	15028	11673	11974	8756	6142	2808	2709	11295
MEAN	191	855	1149	654	537	377	399	282	205	90.6	87.4	377
MAX	462	1120	1490	816	673	482	449	337	265	140	172	471
MIN	121	539	709	480	395	301	333	232	146	56	44	180
CFSM	2.47	11.0	14.8	8.44	6.93	4.87	5.15	3.64	2.65	1.17	1.13	4.87
IN.	2.85	12.32	17.10	9.73	7.21	5.60	5.75	4.20	2.95	1.35	1.30	5.42
AC-FT	11770	50900	70670	40210	29810	23150	23750	17370	12180	5570	5370	22400

CAL YR 1977 TOTAL 155624 MEAN 426 MAX 1490 MIN 34 CFSM 5.50 IN 74.70 AC-FT 308700
WTR YR 1978 TOTAL 157883 MEAN 433 MAX 1490 MIN 44 CFSM 5.59 IN 75.78 AC-FT 313200

12043163 SOOES RIVER BELOW MILLER CREEK NEAR OZETTE, WA

LOCATION.--Lat 48°15'58, long 124°37'30", in NE¼NE¼ sec.21, T.32 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank at downstream side of Crown Zellerback logging road, 0.6 mi (1.0 km) downstream from Miller Creek and 8 mi (13 km) north of Ozette.

DRAINAGE AREA.--32.0 mi^2 (82.9 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1976 to current year.

REVISED RECORDS.--WRD WA 1977: 1976 (M).

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (21.3 m), from topographic map.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,270 ft^3/s (92.6 m^3/s) Nov. 25, 1977, gage height, 13.39 ft (4.081 m); minimum, 9.9 ft^3/s (0.28 m^3/s) Aug. 8, 9, 1978, gage height, 5.54 ft (1.689 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 14	0500	3,100	87.8	13.14	4.005	Dec. 2	0700	2,900	82.1	12.86	3.920
Nov. 25	1800	*3,270	92.6	*13.39	4.081						

Minimum discharge, 9.9 ft^3/s (0.28 m^3/s) Aug. 8, 9, gage height, 5.54 ft (1.689 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	1360	1500	92	148	62	127	59	65	26	12	152
2	51	627	2070	85	350	60	138	61	58	25	13	356
3	46	312	1110	233	529	56	112	57	53	23	12	536
4	42	202	688	404	350	53	109	54	49	23	12	368
5	40	197	533	401	237	49	272	48	46	22	11	197
6	39	413	676	262	233	52	280	46	42	21	11	129
7	47	461	599	856	582	230	150	43	40	21	11	98
8	60	212	464	936	529	282	122	42	39	21	11	88
9	66	844	413	398	419	170	103	41	49	22	10	284
10	49	1200	1200	270	288	109	94	40	59	23	11	832
11	42	589	872	207	208	104	96	78	53	26	17	350
12	38	550	760	168	155	94	80	83	48	22	112	250
13	48	505	1030	155	131	124	100	317	53	20	97	190
14	41	1590	1210	227	127	109	106	543	247	18	58	160
15	37	684	712	197	185	100	187	247	109	17	434	150
16	58	547	467	161	172	90	187	138	74	17	126	140
17	45	434	329	172	124	82	150	104	62	17	65	160
18	39	343	270	135	112	74	265	87	54	17	51	100
19	41	297	242	170	110	68	320	74	47	16	61	79
20	38	258	205	137	97	63	235	66	44	15	62	72
21	53	222	168	434	122	60	168	61	40	14	44	133
22	114	205	146	392	110	56	185	62	41	14	36	233
23	461	195	127	235	100	63	140	60	39	13	46	207
24	300	260	114	175	89	245	114	54	36	13	232	120
25	245	1520	101	146	98	696	97	50	35	13	238	94
26	237	872	93	150	83	267	87	106	35	14	477	82
27	159	744	85	131	72	613	80	332	31	15	180	92
28	173	1050	106	114	68	356	73	205	29	15	107	77
29	383	1210	277	103	---	262	68	117	27	14	83	74
30	732	536	137	94	---	195	64	88	26	13	68	96
31	350	---	104	90	---	150	---	74	---	12	84	---
TOTAL	4130	18447	16808	7730	5828	4994	4309	3437	1630	562	2792	5899
MEAN	133	615	542	249	208	161	144	111	54.3	18.1	90.1	197
MAX	732	1590	2070	936	582	696	320	543	247	26	477	832
MIN	37	195	85	85	68	49	64	40	26	12	10	72
CFSM	4.16	19.2	16.9	7.78	6.50	5.03	4.50	3.47	1.70	.57	2.82	6.16
IN.	4.80	21.44	19.54	8.99	6.77	5.81	5.01	4.00	1.89	.65	3.25	6.86
AC-FT	8190	36590	33340	15330	11560	9910	8550	6820	3230	1110	5540	11700

CAL YR 1977 TOTAL 77195 MEAN 211 MAX 2070 MIN 13 CFSM 6.59 IN 89.74 AC-FT 153100
WTR YR 1978 TOTAL 76566 MEAN 210 MAX 2070 MIN 10 CFSM 6.56 IN 89.01 AC-FT 151900

12043173 WAATCH RIVER BELOW EDUCKET CREEK AT NEAH BAY, WA

LOCATION.--Lat 48°21'25", long 124°37'36", in NW¼SE¼ sec.15, T.33 N., R.15 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on left bank at Neah Bay pumping plant, 80 ft (24 m) downstream from Educket Creek, and 0.7 mi (1.1 km) south of Neah Bay.

DRAINAGE AREA.--9.96 mi² (25.80 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1976 to current year.

REVISED RECORDS.--WDR WA-77-1: 1976(m).

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Water-discharge records good except those below 2.0 ft³/s (0.057 m³/s), which are poor. Makah Water Utility diverts approximately 21 acre-ft (25,900 m³/yr) annually at the gage, for municipal use. No regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Nov. 25, 1977, gage height, 8.76 ft (2.670 m); minimum, 0.12 ft³/s (0.003 m³/s) Aug. 9, 1978, gage height, 0.62 ft (0.189 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 950 ft³/s (26.9 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 14	0200	1,020	28.9	8.25	2.515	Dec. 2	0700	992	28.1	8.14	2.481
Nov. 25	2300	*1,180	33.4	*8.76	2.670						

Minimum discharge, 0.12 ft³/s (0.003 m³/s) Aug. 9, gage height, 0.62 ft (0.189 m).

REVISIONS.--The minimum discharge for water year 1977 has been revised to 0.21 ft³/s (0.006 m³/s) Aug. 15, 1977, gage height, 0.67 ft (0.204 m); revised daily discharges, in cubic feet per second, for the low-water period in August 1977, are given below. These figures supersede those published in the report for 1977.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
Aug. 5	2.5	Aug. 9	1.4	Aug. 13	0.76	Aug. 17	0.52	Aug. 20	0.52
6	2.1	10	1.2	14	.68	18	.44	21	.60
7	2.1	11	1.0	15	.64	19	.56	22	.68
8	1.6	12	.87	16	.56				

Month	Total	Mean	Maximum	Minimum	Runoff in acre-feet
August, 1977	202.73	6.54	65	0.44	402
WTR YR 1977	14,009.43	38.4	450	.44	27,790

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	447	470	21	75	15	30	12	15	3.2	1.4	50
2	12	166	574	18	172	14	30	12	12	3.1	1.4	97
3	11	81	274	67	159	13	27	10	9.9	2.7	1.4	159
4	9.9	51	128	154	115	12	30	9.6	8.7	2.8	1.3	106
5	8.9	52	87	145	74	11	81	8.7	7.4	2.6	1.3	53
6	9.1	142	197	78	79	12	83	8.1	6.8	2.5	1.1	33
7	10	120	165	345	219	75	46	7.4	5.9	2.8	1.1	22
8	14	62	110	304	168	72	34	7.2	5.9	2.5	.60	19
9	13	345	70	117	145	40	26	7.0	8.7	3.6	.60	161
10	10	319	250	66	110	28	23	7.4	8.7	3.9	2.2	246
11	8.7	187	280	44	69	23	21	13	8.3	5.2	6.8	126
12	8.7	172	210	35	46	20	17	23	7.2	3.6	34	72
13	12	196	250	36	34	41	22	115	8.5	2.6	17	56
14	9.6	406	300	89	36	30	32	141	57	2.3	71	44
15	8.9	140	180	63	41	26	60	61	20	2.0	160	36
16	13	110	129	52	33	27	54	35	14	2.0	32	28
17	10	85	79	57	27	22	51	25	12	2.1	17	26
18	11	65	54	40	26	19	113	19	10	2.1	13	19
19	13	49	42	64	26	17	119	16	8.9	1.6	12	16
20	11	38	34	44	23	15	81	13	7.6	1.4	10	15
21	15	29	28	159	34	14	60	11	7.0	1.4	8.1	28
22	33	25	24	112	30	13	71	11	7.0	1.2	7.0	71
23	175	23	21	66	26	15	48	9.9	6.3	1.2	10	59
24	116	30	18	44	23	121	35	8.5	5.4	1.2	100	39
25	89	352	17	34	26	203	26	8.7	5.5	1.1	73	29
26	113	393	16	37	21	97	22	24	5.2	2.5	118	23
27	60	172	14	30	19	248	19	91	4.4	3.3	49	37
28	95	248	24	26	17	115	16	57	3.7	2.5	29	27
29	155	285	59	23	---	79	15	32	3.4	1.6	20	24
30	320	100	30	21	---	53	13	22	3.6	1.5	15	41
31	151	---	24	19	---	37	---	18	---	1.4	31	---
TOTAL	1539.8	4890	4158	2410	1873	1527	1305	843.5	294.0	73.5	845.30	1762
MEAN	49.7	163	134	77.7	66.9	49.3	43.5	27.2	9.80	2.37	27.3	58.7
MAX	320	447	574	345	219	248	119	141	57	5.2	160	246
MIN	8.7	23	14	18	17	11	13	7.0	3.4	1.1	.60	15
AC-FT	3050	9700	8250	4780	3720	3030	2590	1670	583	146	1680	3490

CAL YR 1977 TOTAL 20329.73 MEAN 55.7 MAX 574 MIN .44 AC-FT 40320
WTR YR 1978 TOTAL 21521.10 MEAN 59.0 MAX 574 MIN .60 AC-FT 42690

12043190 SAIL RIVER NEAR NEAH BAY, WA

LOCATION--Lat 48°21'27", long 124°33'37", in NW¼SE¼ sec.18, T.33 N., R.14 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on right bank 100 ft (30 m) upstream from State Highway 112, 0.2 mi (0.3 km) upstream from mouth, and 3.0 mi (4.8 km) east of Neah Bay.

DRAINAGE AREA.--5.42 mi² (14.04 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Water-discharge records good. No regulation. Minor diversion above station for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 762 ft³/s (21.6 m³/s) Nov. 25, 1977, gage height, 6.08 ft (1.817 m); minimum, 0.41 ft³/s (0.012 m³/s) Aug. 8, 9, 1978, gage height, 2.94 ft (0.896 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1500	533	15.1	5.48	1.670	Nov. 25	1600	*762	21.6	*6.08	1.853
Nov. 14	0300	589	16.7	5.64	1.719	Dec. 2	0600	512	14.5	5.42	1.652

Minimum discharge, 0.41 ft³/s (0.012 m³/s) Aug. 8, 9, gage height, 2.94 ft (0.896 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	316	222	18	37	11	28	9.5	16	3.4	.85	42
2	9.4	153	369	16	84	9.5	25	8.9	13	3.1	.85	65
3	7.8	77	185	39	102	8.9	22	7.9	10	3.1	.71	115
4	6.7	53	99	88	81	7.9	21	7.4	8.9	2.8	.59	81
5	6.2	44	66	93	60	7.4	40	6.9	7.4	2.8	.59	53
6	6.2	68	99	66	55	8.9	50	6.1	6.5	2.5	.59	39
7	6.2	86	90	215	119	29	40	5.7	6.0	2.5	.59	29
8	9.4	58	62	232	113	36	32	5.3	5.7	2.5	.49	24
9	7.3	169	50	93	84	31	26	4.9	8.9	2.5	.49	102
10	5.4	227	220	57	68	26	23	4.9	8.4	2.8	.71	161
11	4.7	133	175	41	50	23	20	8.9	7.9	2.8	3.6	81
12	5.1	117	123	34	39	20	16	12	7.4	2.3	11	53
13	5.4	113	167	30	31	28	17	49	8.4	2.0	6.1	42
14	4.4	284	192	44	29	24	21	90	29	1.8	10	32
15	4.4	110	119	42	28	22	30	60	18	1.6	44	29
16	5.1	76	86	39	23	23	32	41	14	1.8	15	24
17	4.1	60	60	37	21	20	34	31	12	1.8	8.4	20
18	4.1	46	45	31	21	18	50	24	10	1.6	6.5	16
19	3.8	36	36	39	20	16	63	19	8.4	1.4	6.5	12
20	3.5	28	29	34	19	13	53	15	7.9	1.2	4.9	11
21	8.4	23	24	81	21	12	45	12	6.9	1.0	4.3	22
22	19	19	20	81	19	11	44	12	6.9	1.0	3.9	37
23	99	17	17	56	18	13	37	9.5	6.0	.85	6.1	41
24	84	22	14	41	17	56	31	8.4	5.7	.85	36	34
25	77	283	12	34	17	129	25	7.9	5.7	.85	40	28
26	81	165	10	30	14	74	21	18	4.9	2.3	74	23
27	68	108	9.5	24	13	121	18	42	4.6	2.3	41	25
28	65	155	17	22	12	86	15	37	3.9	1.6	29	21
29	90	167	30	20	---	57	12	30	3.6	1.2	21	20
30	205	77	22	17	---	42	11	24	3.6	.85	16	30
31	119	---	20	16	---	34	---	20	---	.85	22	---
TOTAL	1035.6	3290	2689.5	1710	1215	1017.6	902	638.2	265.6	59.95	415.76	1312
MEAN	33.4	110	86.8	55.2	43.4	32.8	30.1	20.6	8.85	1.93	13.4	43.7
MAX	205	316	369	232	119	129	63	90	29	3.4	74	161
MIN	3.5	17	9.5	16	12	7.4	11	4.9	3.6	.85	.49	11
CFSM	6.16	20.3	16.0	10.2	8.01	6.05	5.55	3.80	1.63	.36	2.47	8.06
IN.	7.11	22.58	18.46	11.73	8.34	6.98	6.19	4.38	1.82	.41	2.85	9.00
AC-FT	2050	6530	5330	3390	2410	2020	1790	1270	527	119	825	2600

CAL YR 1977 TOTAL 14616.80 MEAN 40.0 MAX 369 MIN 1.3 CFSM 7.38 IN 100.30 AC-FT 28990
WTR YR 1978 TOTAL 14551.21 MEAN 39.9 MAX 369 MIN .49 CFSM 7.36 IN 99.85 AC-FT 28860

12045000 LAKE MILLS AT GLINES CANYON, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°00'08", long 123°35'55", in SW¼SE¼ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Park, at Glines Canyon Dam on Elwha River 2 mi (3.2 km) upstream from Griff Creek, 4.1 mi (6.6 km) south of Elwha, and 11 mi (17.7 km) southwest of Port Angeles.

DRAINAGE AREA.--245 mi^2 (635 km^2).

PERIOD OF RECORD.--April 1927 to current year. Prior to October 1950 monthly change in contents, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft (6.00 m) below National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Total capacity, 37,790 acre-ft (46.6 hm^3) at gage height 608 ft (185.3 m), top of gates. Dead storage below gage height 579 ft (176.5 m), 26,000 acre-ft (32.1 hm^3). Figures given herein represent total contents. Water is used for power by Crown Zellerbach Corp.

COOPERATION.--Gage height record furnished by Crown Zellerbach Corp.

EXTREMES FOR PERIOD OF RECORD.-- Maximum contents observed, 39,940 acre-ft (49.2 hm^3) Dec. 22, 1936, gage height, 613.0 ft (186.84 m); minimum observed since reservoir first filled in May 1927, 24,290 acre-ft (29.9 hm^3) Nov. 14, 1929, gage height, 574.4 ft (175.08 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,037 acre-ft (48.1 hm^3) July 7, 8, 15, gage height, 610.9 ft (186.20 m); minimum observed, 34,081 acre-ft (42.0 hm^3) Apr. 18, gage height, 599.1 ft (182.61 m).

MONTHEND GAGE HEIGHTS AND CONTENTS AT 2400 WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	605.7	36,824	----
Oct. 31	606.9	37,328	+504
Nov. 30	608.1	37,833	+505
Dec. 31	609.6	38,478	+645
CAL YR 1977	----	----	-172
Jan. 31	605.8	36,866	-1,612
Feb. 28	605.9	36,908	+42
Mar. 31	608.5	38,005	+1,097
Apr. 30	608.1	37,833	-172
May 31	606.6	37,202	-631
June 30	610.2	38,736	+1,534
July 31	609.0	38,220	-516
Aug. 31	610.4	38,822	+602
Sept. 30	606.9	37,328	-1,494
WTR YR 1978	----	----	+504

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°03'18", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft (91 m) upstream from site of McDonald Bridge (now removed), 0.7 mi (1.1 km) upstream from Little River, 8 mi (12.9 km) southwest of Port Angeles, and at mile 8.6 (13.8 km).

DRAINAGE AREA.--269 mi² (697 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-October 1897 to December 1901, October 1918 to current year. Published as "at McDonald" 1897-1901.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M) 1932, 1933(M). WSP 1566: 1957(m).

GAGE.--Water-stage recorder. Datum of gage is 200.00 ft (60.960 m) National Geodetic Vertical Datum of 1929. Oct. 1, 1897, to Dec. 31, 1901, nonrecording gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water- stage recorder under McDonald Bridge at datum 7.4 ft (2.26 m) higher.

REMARKS.--Water-discharge records excellent. Water is diverted through Glines Canyon powerhouse and returned to river above gage. Flow partly regulated by Lake Mills 4.9 mi (7.9 km) upstream (see sta 12045000).

AVERAGE DISCHARGE.--64 years (water years 1898-1901, 1919-1978), 1,511 ft³/s (42.79 m³/s), 76.28 in/yr (1,938 mm/yr), 1,095,000 acre-ft/yr (1,350 hm³/yr) adjusted for storage since April 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,600 ft³/s (1,180 m³/s) Nov. 18, 1897, gage height, 14.5 ft (4.42 m), from graph based on gage readings, site and datum then in use, from rating curve extended above 3,300 ft³/s (93.5 m³/s) on basis of two determinations of flow over dam at discharge 26,700 ft³/s (756 m³/s) and 30,100 ft³/s (852 m³/s), referred to 1897 datum; minimum daily, 10 ft/s (0.28 m³/s) Oct. 3, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,500 ft³/s (524 m³/s) Nov. 1, gage height, 19.76 ft (6.023 m); minimum, 328 ft³/s (9.29 m³/s) Oct. 21, 22, gage height, 8.90 ft (2.713 m); minimum daily, 342 ft³/s (9.69 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	515	7260	3670	1120	848	968	1560	1020	1480	1860	854	984
2	500	6280	7070	1170	1040	872	1540	1110	1790	1800	806	1360
3	460	2820	4850	1210	1160	806	1450	1340	2260	1650	794	1170
4	440	2230	3400	1810	1210	854	1380	1230	2620	1590	884	1040
5	440	1830	2870	2140	1250	884	1340	1120	3130	1600	686	968
6	440	1690	3130	1760	1740	800	1140	1220	3150	1630	698	788
7	400	1690	2620	1580	2350	776	1130	1200	2740	1660	770	704
8	342	1530	2200	3080	2480	1230	1370	1060	2580	1800	770	644
9	346	1630	2040	2730	2280	1240	1270	1080	2520	1640	740	1980
10	351	3790	3920	2380	1820	1200	1080	928	2230	1440	716	2530
11	355	2760	8160	2060	1600	1240	1020	1180	1920	1270	716	1450
12	355	2500	6080	1820	1530	1100	1020	1230	1990	1160	728	1090
13	360	2850	6610	1660	1410	992	1050	1230	2110	1230	728	992
14	365	4220	7640	1740	1260	854	1070	1960	1980	1320	674	920
15	365	3160	5530	1820	1260	848	1020	1690	1850	1420	776	854
16	370	2540	3640	1710	1230	848	1060	1630	1840	1450	782	836
17	370	2040	2840	1550	1160	806	944	1620	1620	1320	686	776
18	370	1720	2710	1450	1050	776	806	1610	1340	1230	614	746
19	370	1580	2230	1360	1060	776	710	1600	1730	1160	560	710
20	390	1360	1990	1240	936	776	848	1680	1860	1140	560	692
21	385	1410	2000	1420	968	776	842	1800	1970	1120	540	710
22	380	1220	1960	1660	1080	914	1050	1810	2000	1110	525	1070
23	728	1180	1730	1490	1030	1100	1020	1720	1810	1170	525	1620
24	1240	1230	1480	1390	1060	1460	928	1580	1820	1180	836	1140
25	2070	4780	1380	1310	1100	3300	818	1340	1630	1110	1380	1060
26	1460	5470	1300	1240	1090	2380	818	1140	1650	1100	1220	936
27	1010	3150	1140	1200	1090	2140	872	1150	1640	1220	746	854
28	968	2360	992	1140	1060	2140	928	1220	1800	1120	650	836
29	1350	3400	1290	1100	---	1940	960	1340	2060	1040	686	788
30	2420	2710	1280	1150	---	1610	944	1340	2100	960	686	788
31	2000	---	1170	968	---	1420	---	1340	---	890	686	---
TOTAL	21915	82390	98922	49458	37152	37826	31998	42518	61220	41390	23022	31036
MEAN	707	2746	3191	1595	1327	1220	1067	1372	2041	1335	743	1035
MAX	2420	7260	8160	3080	2480	3300	1560	1960	3150	1860	1380	2530
MIN	342	1180	992	968	848	776	710	928	1340	890	525	644
AC-FT	43470	163400	196200	98100	73690	75030	63470	84330	121400	82100	45660	61560
†	+504	+505	+645	-1,612	+42	+1,097	-172	-631	-1,534	-516	+602	-1,494
MEAN‡	715	2,755	3,200	1,569	1,328	1,238	1,064	1,361	2,066	1,326	752	1,010
CFSM‡	2.66	10.24	11.90	5.83	4.94	4.60	3.96	5.06	7.68	4.93	2.80	3.75
IN.‡	3.06	11.43	13.72	6.73	5.14	5.31	4.41	5.83	8.57	5.69	3.22	4.19
AC-FT‡	43,970	163,900	196,800	96,490	73,730	76,130	63,300	83,700	122,900	81,580	46,260	60,070

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CAL YR 1977   TOTAL  467,804   MEAN   1,282   MAX  8,160   MIN  342   AC-FT    927,900
   DO.......  MEAN‡    1,281   CFSM‡  4.76    IN‡  64.66   AC-FT‡   927,700
WTR YR 1978   TOTAL  558,847   MEAN   1,531   MAX  8,160   MIN  342   AC-FT  1,108,000
   DO.......  MEAN‡    1,532   CFSM‡  5.70    IN‡  77.30   AC-FT‡ 1,109,000
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† Change in contents, in acre-feet, in Lake Mills.
‡ Adjusted for change in contents in Lake Mills.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962-70, 1972 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1976 to August 1977.

REMARKS.--Prior to 1962 published as "Elwah River near Port Angeles". October 1971 to September 1974 published as Elwha River below Little River near Port Angeles.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1977												
25...	0930	2000	88	7.6	9.1	10	--	9.6	K3	K19	45	10
NOV												
14...	1230	5080	70	7.4	6.2	70	--	10.9	<1	K30	40	12
DEC												
19...	1430	2060	79	5.8	4.2	25	--	12.9	<1	<2	36	4
JAN , 1978												
30...	1230	1240	82	7.9	4.7	6	--	12.9	1	<1	43	5
FEB												
21...	1130	920	88	7.3	5.4	2	--	13.4	K180	<1	46	10
MAR												
15...	1000	848	85	7.4	5.4	1	--	12.8	<1	1	30	3
APR												
18...	0930	836	84	7.7	6.5	1	--	12.4	<1	<2	44	5
MAY												
30...	1215	1340	80	--	9.7	--	.90	11.5	<1	2	42	10
JUN												
19...	1400	1870	61	8.0	10.6	--	.90	11.2	6	3	31	3
JUL												
26...	0930	968	61	7.6	14.3	--	1.3	10.6	2	5	34	5
AUG												
29...	1600	686	80	7.4	15.3	--	.60	10.2	<2	<2	37	6
SEP												
13...	0830	992	78	7.2	10.9	--	3.8	10.8	7	11	37	7

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT , 1977												
25...	17	.6	2.1	9	.1	.2	42	0	34	1.7	7.8	1.1
NOV												
14...	14	1.1	1.7	9	.1	.2	34	0	28	2.2	7.5	1.2
DEC												
19...	12	1.5	1.6	9	.1	.2	39	0	32	9.9	9.3	1.1
JAN , 1978												
30...	15	1.3	1.6	7	.1	.2	46	0	38	.9	11	1.0
FEB												
21...	16	1.4	1.6	7	.1	.2	44	0	36	3.5	8.4	1.1
MAR												
15...	9.5	1.6	3.2	18	.3	.5	33	0	27	2.1	4.6	.9
APR												
18...	15	1.5	1.9	9	.1	.1	47	0	39	1.5	8.5	1.0
MAY												
30...	15	1.2	1.8	8	.1	.1	--	--	32	--	7.9	.9
JUN												
19...	11	.8	1.5	10	.1	.2	--	--	28	--	8.1	.7
JUL												
26...	12	1.0	2.0	11	.2	.1	--	--	29	--	7.9	.7
AUG												
29...	13	1.0	1.8	10	.1	.1	--	--	31	--	11	.9
SEP												
13...	13	1.2	2.9	14	.2	.2	--	--	30	--	11	1.0

K Results based upon colony counts outside the ideal range.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)
OCT , 1977 25...	.1	6.3	56	56	.08	302	18	.00	.00	--	--	--
NOV 14...	.0	5.5	48	48	.07	658	80	.05	.02	--	--	--
DEC 19...	.1	6.4	45	51	.06	250	--	.03	.02	--	--	--
JAN , 1978 30...	.1	6.6	49	60	.07	164	13	.32	.01	.30	.31	.26
FEB 21...	.1	6.9	52	57	.07	129	9	.01	.00	.06	.06	.04
MAR 15...	.1	5.8	42	42	.06	96.2	6	.13	.00	.05	.05	.04
APR 18...	.0	6.4	60	58	.08	135	1	.05	.01	.22	.23	.23
MAY 30...	.1	4.6	51	51	.07	185	5	.02	.00	--	--	--
JUN 19...	.1	5.4	38	45	.05	192	41	.01	.01	.23	.24	.16
JUL 26...	.0	5.0	42	46	.06	110	12	.00	.00	.15	.15	.04
AUG 29...	.0	4.9	51	51	.07	94.5	11	.01	.01	.20	.21	.10
SEP 13...	.1	5.2	52	53	.07	139	6	.02	.00	.24	.24	.03

DATE	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977 25...	.05	--	--	.03	.00	--	1.4	.1	14	76	97
NOV 14...	--	--	--	.08	.00	1.9	--	--	94	1290	98
DEC 19...	.00	--	--	.03	.03	.6	--	--	42	234	99
JAN , 1978 30...	.05	.63	2.8	.01	.01	--	3.6	.0	5	17	88
FEB 21...	.02	.07	.31	.01	.01	.6	--	--	41	102	98
MAR 15...	.01	.18	.80	.00	.01	1.1	--	--	3	6.9	90
APR 18...	.00	.28	1.2	.01	.00	--	5.0	.0	4	9.0	80
MAY 30...	.10	--	--	.00	.00	1.1	--	--	4	14	82
JUN 19...	.08	.25	1.1	.01	.01	7.9	--	--	5	25	95
JUL 26...	.11	.15	.66	.00	.00	--	1.1	.1	4	10	80
AUG 29...	.11	.22	.97	.02	.01	.8	--	--	2	3.7	99
SEP 13...	.21	.26	1.2	.01	.00	1.0	--	--	8	21	94

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUSPENDED TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)
OCT , 1977 25...	0930	1	1	0	0	0	0	<10	<8	2
JAN , 1978 30...	1230	1	1	0	0	0	0	2	1	1
APR 18...	0930	4	1	3	0	0	0	2	1	1
JUL 26...	0930	--	--	1	300	200	100	2	1	1

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
OCT , 1977 25...	4	4	0	<50	<50	0	<10	<7	3	880
JAN , 1978 30...	10	10	0	1	1	0	18	16	2	240
APR 18...	10	10	0	2	0	2	5	4	1	360
JUL 26...	10	10	0	2	1	1	9	5	4	160

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA

DATE	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)
OCT , 1977 25...	--	30	<100	<95	5	30	20	10	.0	.0
JAN , 1978 30...	--	10	22	11	11	20	10	10	.3	.0
APR 18...	--	60	8	1	7	20	10	10	.2	.2
JUL 26...	110	50	17	11	6	10	10	0	.0	.0

DATE	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1977 25...	.0	0	0	0	<10	<10	0	40	30	10
JAN , 1978 30...	13	0	0	0	2	2	0	100	90	10
APR 18...	.0	0	0	0	0	0	0	10	0	10
JUL 26...	.0	--	--	0	1	1	0	20	0	20

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
NOV , 1977 14...	1230	ND	ND	ND	ND	ND	ND	ND	ND
FEB , 1978 21...	1130	ND	ND	ND	ND	ND	ND	ND	ND
MAY 30...	1215	ND	ND	ND	ND	ND	ND	ND	ND
AUG 29...	1600	ND	ND	--	ND	ND	ND	ND	ND

DATE	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)
NOV , 1977 14...	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB , 1978 21...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 30...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	METHYL TRITHION, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	SIMAZINE TOTAL COULSON COND. (UG/L)
NOV , 1977 14...	ND	ND	ND	ND	ND	ND	ND	ND
FEB , 1978 21...	ND	ND	ND	ND	ND	ND	ND	ND
MAY 30...	ND	ND	ND	ND	--	--	--	ND
AUG 29...	ND	ND	ND	ND	--	--	--	--

ND None detected.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

PHYTOPLANKTON ANALYSES. OCTOBER 1977 TO MAY 1978

DATE	NOV 14.77	MAY 30.78
TIME	1230	1215
TOTAL CELLS/ML	0	660
DIVERSITY: DIVISION	0.0	1.3
.CLASS	0.0	1.3
..ORDER	0.0	1.9
...FAMILY	0.0	2.3
....GENUS	0.0	2.3

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)				
.CHLOROPHYCEAE				
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	--	-	58	9
CHRYSOPHYTA				
.BACILLARIOPHYCEAE				
..CENTRALES				
...COSCINODISCACEAE				
....CYCLOTELLA	*	0	330#	50
..PENNALES				
...ACHNANTHACEAE				
....ACHNANTHES	--	-	14	2
...CYMBELLACEAE				
....CYMBELLA	--	-	14	2
...FRAGILARIACEAE				
....ASTERIONELLA	--	-	72	11
...NITZSCHIACEAE				
....NITZSCHIA	--	-	43	7
CRYPTOPHYTA (CRYPTOMONADS)				
.CRYPTOPHYCEAE				
..CRYPTOMONIDALES				
...CRYPTOMONODACEAE				
....CRYPTOMONAS	--	-	14	2
CYANOPHYTA (BLUE-GREEN ALGAE)				
.CYANOPHYCEAE				
..HORMOGONALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	--	-	100#	15
EUGLENOPHYTA (EUGLENOIDS)				
.EUGLENOPHYCEAE				
..EUGLENALES				
...EUGLENACEAE				
....EUGLENA	--	-	14	2

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%
Additional phytoplankton data available from district office in Tacoma.

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
OCT . 1977						
25...	0930	.236	.472	.000	.000	35
JAN . 1978						
30...	1230	.709	.945	.460	.000	42
APR						
18...	0930	7.24	9.68	4.55	2.16	34
JUL						
26...	0930	2.13	3.23	.510	.420	37

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW¼NE¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi (1.6 km) upstream from Canyon Creek, 4.8 mi (7.7 km) southwest of Sequim, and at mile 11.8 (19.0 km).

DRAINAGE AREA.--156 mi² (404 km²).

PERIOD OF RECORD.--June 1923 to September 1930, June 1937 to current year. July 1897 to July 1898 at site below Canyon Creek, published as "near Sequim", records not equivalent.

REVISED RECORDS.--WSP 1316: 1924-25(M), 1927(M). WSP 1932: 1957, 1958-59(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 569.3 ft (173.52 m) National Geodetic Vertical Datum of 1929 (river-profile survey). June 8, 1923, to Sept. 30, 1930, nonrecording gage just above fish-hatchery diversion 0.5 mi (0.8 km) downstream at different datum. June 19 to Aug. 12, 1937, nonrecording gage at present site and datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--48 years (water years 1924-30, 1938-78), 390 ft³/s (11.04 m³/s), 33.95 in/yr (862 mm/yr), 282,600 acre-ft/yr (348 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s (193 m³/s) Nov. 27, 1949, gage height, 8.58 ft (2.615 m) from floodmarks, from rating extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 68 ft³/s (1.93 m³/s) Dec. 9, 10, 1972, during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2000	*2,440	69.1	*5.92	1.804

Minimum discharge, 98 ft³/s (2.78 m³/s) Oct. 22, 23, gage height, 2.63 ft (0.802 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	148	913	485	236	217	211	335	321	533	680	321	288
2	141	1250	930	247	222	201	311	332	680	687	321	321
3	134	621	787	250	245	188	291	354	865	621	332	321
4	132	455	597	268	233	188	278	335	1020	641	350	335
5	128	385	495	284	245	185	265	301	1120	628	325	297
6	124	332	495	262	304	177	253	284	1090	597	291	268
7	126	311	455	278	573	281	242	284	973	628	288	250
8	119	275	401	561	516	328	233	314	956	634	284	233
9	117	275	373	490	555	275	228	414	873	597	288	973
10	115	377	485	480	397	247	233	495	708	500	281	981
11	113	401	1150	436	335	245	250	427	615	450	275	579
12	111	381	913	393	294	239	245	369	660	432	268	445
13	115	381	1130	361	272	228	245	389	687	475	256	385
14	111	694	1350	385	256	214	236	414	585	516	236	350
15	107	533	999	401	242	203	239	401	516	533	253	318
16	107	409	750	377	228	198	272	369	490	694	245	297
17	106	346	615	354	222	196	262	358	505	549	222	284
18	104	308	516	325	217	198	250	369	585	475	214	262
19	104	278	450	301	225	201	262	423	634	465	214	247
20	100	256	409	284	230	203	268	555	641	450	219	239
21	100	240	385	297	245	211	259	694	687	441	206	236
22	98	235	361	288	247	230	259	567	722	450	206	259
23	198	235	339	265	250	265	256	480	603	475	201	335
24	242	230	308	256	250	284	247	423	549	465	441	304
25	358	511	291	256	247	505	250	397	522	436	414	281
26	278	1020	278	256	236	480	278	373	527	522	335	259
27	222	615	272	245	225	441	318	385	573	533	272	253
28	211	485	268	239	222	423	354	441	694	405	259	242
29	291	500	281	230	---	397	354	423	795	369	250	233
30	365	427	262	222	---	377	343	401	757	350	245	222
31	284	---	239	219	---	354	---	427	---	335	245	---
TOTAL	5009	13679	17069	9746	7950	8373	8116	12519	21165	16033	8557	10297
MEAN	162	456	551	314	284	270	271	404	706	517	276	343
MAX	365	1250	1350	561	573	505	354	694	1120	694	441	981
MIN	98	230	239	219	217	177	228	284	490	335	201	222
CFSM	1.04	2.92	3.53	2.01	1.82	1.73	1.74	2.59	4.53	3.31	1.77	2.20
IN.	1.19	3.26	4.07	2.32	1.90	2.00	1.94	2.99	5.05	3.82	2.04	2.46
AC-FT	9940	27130	33860	19330	15770	16610	16100	24830	41980	31800	16970	20420

CAL YR 1977 TOTAL 96516 MEAN 264 MAX 1350 MIN 76 CFSM 1.69 IN 23.02 AC-FT 191400
WTR YR 1978 TOTAL 138513 MEAN 379 MAX 1350 MIN 98 CFSM 2.43 IN 33.03 AC-FT 274700

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi (8.4 km) west of Brinnon and at mile 4.5 (7.2 km).

DRAINAGE AREA.--66.5 mi^2 (172 km^2).

PERIOD OF RECORD.--August to December 1910 (gage heights only), December 1910 to December 1911, June 1938 to current year. Published as "near Duckabush" 1910-11. Chemical analyses April 1972 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft (73.61 m) National Geodetic Vertical Datum of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--40 years (water years 1939-78), 417 ft^3/s (11.81 m^3/s) 85.16 in/yr (2,163 mm/yr), 302,100 acre-ft/yr (372 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,960 ft^3/s (254 m^3/s) Nov. 26, 1949, gage height, 10.06 ft (3.066 m), from rating curve extended above 4,800 ft^3/s (136 m^3/s) on basis of slope-area measurement of peak flow; minimum, 45 ft^3/s (1.27 m^3/s) Oct. 26, 28, 29, 1942; minimum gage height, 1.32 ft (0.402 m) Sept. 30, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	1900	5,010	142	7.47	2.277	Feb. 7	1300	2,770	78.4	5.66	1.725
Dec. 11	0200	2,640	74.8	5.55	1.692	Sept. 9	unknown	*5,750	163	*8.04	2.451

Minimum discharge, 70 ft^3/s (1.98 m^3/s) Oct. 21, 22, gage height, 1.54 ft (0.469 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	2050	650	278	272	254	420	369	480	420	212	420
2	143	1700	1460	263	352	239	392	373	540	420	207	500
3	131	800	907	285	448	227	400	384	620	400	205	410
4	123	580	620	440	428	218	412	345	720	370	202	390
5	115	510	500	851	625	207	408	313	740	360	197	310
6	109	456	550	590	1120	205	384	292	650	370	187	270
7	113	436	560	550	2200	1210	359	292	580	380	182	240
8	103	369	452	1350	1370	914	348	331	540	360	175	290
9	101	432	400	1130	1060	540	334	424	560	350	175	3200
10	96	776	872	914	686	432	348	452	500	330	170	1800
11	91	650	2000	662	520	376	366	388	490	310	163	850
12	87	722	1280	525	444	342	331	352	520	300	172	650
13	94	893	1400	464	380	320	313	560	550	330	161	550
14	85	1410	1790	998	359	289	296	1080	500	340	149	450
15	82	824	1440	935	338	266	303	752	450	340	159	400
16	79	600	991	788	310	251	380	555	400	350	149	360
17	77	496	728	728	285	242	384	476	380	340	141	330
18	74	420	590	600	275	239	496	444	410	320	135	310
19	73	366	520	555	303	245	590	500	430	320	143	280
20	70	331	452	492	345	251	565	600	420	310	159	250
21	70	303	412	716	369	263	464	580	430	303	145	290
22	71	285	376	620	376	310	428	470	400	303	151	416
23	306	269	348	505	388	550	392	400	380	306	500	565
24	376	260	320	428	369	788	359	370	350	292	1800	436
25	496	782	296	388	352	1670	366	340	340	275	1000	359
26	396	1220	282	355	331	886	428	430	330	317	600	313
27	272	635	269	327	299	698	484	680	370	324	400	285
28	555	500	263	303	275	625	496	540	450	260	300	266
29	1570	674	440	282	---	535	460	450	480	239	250	254
30	1470	500	359	263	---	500	408	470	440	233	220	239
31	746	---	310	251	---	460	---	490	---	221	200	---
TOTAL	8331	20249	21837	17836	14879	14552	12114	14502	14450	10093	9009	15683
MEAN	269	675	704	575	531	469	404	468	482	326	291	523
MAX	1570	2050	2000	1350	2200	1670	590	1080	740	420	1800	3200
MIN	70	260	263	251	272	205	296	292	330	221	135	239
CFSM	4.05	10.2	10.6	8.65	7.99	7.05	6.08	7.04	7.25	4.90	4.38	7.87
IN.	4.66	11.33	12.22	9.98	8.32	8.14	6.78	8.11	8.08	5.65	5.04	8.77
AC-FT	16520	40160	43310	35380	29510	28860	24030	28760	28660	20020	17870	31110

CAL YR 1977 TOTAL 113364 MEAN 311 MAX 2050 MIN 70 CFSM 4.68 IN 63.41 AC-FT 224900
WTR YR 1978 TOTAL 173535 MEAN 475 MAX 3200 MIN 70 CFSM 7.14 IN 97.07 AC-FT 344200

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi (1.9 km) upstream from Lake Cushman, 2.8 mi (4.5 km) upstream from Dry Creek, 11.3 mi (18.2 km) northwest of Hoodsport, and at mile 29.2 (47.0 km).

DRAINAGE AREA.--57.2 mi² (148 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M), WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft (232.34 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 10, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years, 506 ft³/s (14.33 m³/s) 120.13 in/yr (3,051 mm/yr), 366,600 acre-ft/yr (452 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 5, 1934, gage height, 14.4 ft (4.39 m), from high-water mark, from rating curve extended above 9,800 ft³/s (278 m³/s) on basis of slope-area measurement at gage height 12.2 ft (3.72 m); minimum recorded, 16 ft³/s (0.453 m³/s) Sept. 23, 1930, gage height, 1.12 ft (0.341 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,200 ft³/s (90.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1545	*9,760	276	*8.86	2.701	Dec. 10	2145	5,120	145	6.87	2.094
Nov. 25	1600	4,290	121	6.40	1.951	Dec. 13	2015	3,340	94.6	5.80	1.768
Dec. 2	0615	3,540	100	5.93	1.807	Sept. 9	1645	5,030	142	6.82	2.079

Minimum discharge, 84 ft³/s (2.38 m³/s) Oct. 20, 21; minimum gage height, 1.68 ft (0.512 m) Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	3740	1400	368	375	322	490	398	576	379	155	684
2	168	2030	2570	352	501	304	452	406	654	373	155	672
3	155	1090	1490	483	708	288	463	396	743	352	153	504
4	145	823	1030	947	642	279	487	360	820	334	150	501
5	138	711	817	1270	921	266	486	332	825	323	143	388
6	135	648	1010	840	1410	297	453	317	730	322	133	342
7	140	627	912	920	2230	1600	432	324	659	330	131	297
8	128	525	727	2020	1540	1070	420	367	617	329	128	362
9	123	802	636	1390	1260	669	418	448	644	309	128	3450
10	117	1240	2010	1100	894	532	458	440	555	275	121	1860
11	110	964	3000	866	704	461	448	422	557	257	121	984
12	108	1040	1910	713	591	408	399	420	558	246	153	721
13	113	1290	2220	718	521	383	374	961	634	257	119	597
14	102	1790	2560	1410	490	346	350	1460	593	260	113	512
15	98	1130	1940	1150	441	323	373	1000	541	259	140	452
16	95	881	1350	1040	402	306	394	721	477	266	115	412
17	91	712	1050	964	377	300	398	605	452	239	104	380
18	89	602	872	833	372	300	495	560	477	222	102	347
19	87	529	742	800	416	308	755	613	489	217	102	320
20	84	470	655	742	447	312	719	721	481	214	100	305
21	91	426	594	1180	469	334	584	702	495	208	100	384
22	96	398	546	926	476	385	548	547	479	211	110	681
23	535	379	500	731	500	879	492	473	407	211	271	790
24	742	366	460	620	465	1190	465	433	377	199	1740	580
25	874	1890	425	570	448	2040	507	413	365	191	1010	465
26	600	1590	398	517	407	1080	576	565	356	235	595	401
27	396	1000	374	468	372	871	580	743	380	217	387	368
28	965	943	426	434	346	765	531	639	435	182	343	339
29	1890	1270	594	401	---	651	476	521	460	174	285	323
30	1900	826	465	374	---	587	431	472	413	168	251	302
31	951	---	402	360	---	538	---	496	---	163	250	---
TOTAL	11448	30732	34085	25507	18725	18394	14454	17275	16249	7922	7908	18723
MEAN	369	1024	1100	823	669	593	482	557	542	256	255	624
MAX	1900	3740	3000	2020	2230	2040	755	1460	825	379	1740	3450
MIN	84	366	374	352	346	266	350	317	356	163	100	297
CFSM	6.45	17.9	19.2	14.4	11.7	10.4	8.43	9.74	9.48	4.48	4.46	10.9
IN.	7.45	19.99	22.17	16.59	12.18	11.96	9.40	11.23	10.57	5.15	5.14	12.18
AC-FT	22710	60960	67610	50590	37140	36480	28670	34260	32230	15710	15690	37140

CAL YR 1977 TOTAL 164678 MEAN 451 MAX 3740 MIN 71 CFSM 7.89 IN 107.10 AC-FT 326600
WTR YR 1978 TOTAL 221422 MEAN 607 MAX 3740 MIN 84 CFSM 10.6 IN 144.00 AC-FT 439200

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1965 to current year.

INSTRUMENTATION.--Temperature recorder since April 1965.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 12, 13, 15-17, 1977, Aug. 9, 1978; minimum (1965-67, 1968-77), 0.0°C Mar. 24, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 9; minimum, 2.0°C Nov. 21, 22, 23, Jan. 1, 2.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPFCIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
14...	1030	2040	52	7.8	5.4	2	12.7
DEC							
08...	1105	730	73	7.8	3.5	0	13.2
JAN , 1978							
12...	1015	718	72	7.6	4.6	0	12.6
FEB							
07...	1130	2560	42	7.9	4.3	4	12.4
MAR							
09...	1020	676	67	7.5	4.6	0	12.6
APR							
06...	1010	441	79	7.7	4.1	0	12.8
MAY							
04...	1250	354	81	7.5	6.5	0	12.1
JUN							
15...	1215	535	68	7.4	7.4	0	11.9
JUL							
20...	1445	208	86	7.6	12.3	0	10.6
AUG							
17...	1310	104	88	7.8	12.0	0	10.8
SEP							
12...	1135	718	70	7.4	8.7	0	11.3

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
14...	100	2	.01	.02	.10	.01	.01
DEC							
08...	K13	K2	.03	.00	.02	.00	.00
JAN , 1978							
12...	K10	<1	.05	.01	.14	.01	.00
FEB							
07...	E900	K3	.02	.05	.14	.02	.00
MAR							
09...	45	<1	.02	.02	.04	.01	.00
APR							
06...	14	<1	.02	.03	.10	.01	.00
MAY							
04...	7	<1	.01	.01	.06	.00	.00
JUN							
15...	K160	<1	.01	.01	.03	--	.01
JUL							
20...	280	<1	.03	.01	.09	.01	.01
AUG							
17...	21	2	.01	.01	.02	.00	.00
SEP							
12...	92	3	.03	.02	.12	.01	.00

E Estimated.
K Results based upon colony counts outside the ideal range.

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.5	8.0	8.0	6.5	5.5	6.0	5.0	4.0	4.5	2.5	2.0	2.5
2	8.5	7.5	8.0	6.0	5.5	5.5	5.5	5.0	5.0	2.5	2.0	2.5
3	7.5	7.0	7.5	5.5	5.0	5.5	5.0	4.5	5.0	3.0	2.5	3.0
4	7.5	6.5	7.0	5.5	5.5	5.5	4.5	4.0	4.5	3.5	3.0	3.0
5	7.5	7.0	7.5	6.0	5.5	6.0	4.0	2.5	3.5	4.0	3.5	3.5
6	7.5	7.5	7.5	5.5	5.5	5.5	4.0	2.5	3.5	3.5	3.5	3.5
7	8.0	7.0	7.5	5.5	5.0	5.5	3.5	3.5	3.5	3.5	3.5	3.5
8	8.5	7.5	8.0	4.5	4.5	4.5	3.5	3.5	3.5	4.0	3.5	3.5
9	8.0	7.0	7.5	5.0	4.5	4.5	3.5	3.0	3.0	4.5	4.0	4.0
10	8.0	7.5	8.0	5.5	5.0	5.5	4.0	3.5	3.5	4.5	4.5	4.5
11	8.0	7.5	7.5	6.0	5.5	6.0	4.5	4.0	4.0	4.5	4.5	4.5
12	8.0	7.5	8.0	5.5	5.0	5.5	4.5	3.5	4.0	4.5	4.5	4.5
13	9.0	8.0	8.0	5.5	5.0	5.5	4.5	3.5	4.0	4.5	4.5	4.5
14	8.0	7.5	7.5	5.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
15	8.5	7.5	8.0	5.5	4.5	5.0	5.0	4.5	4.5	5.0	4.5	4.5
16	8.5	7.5	8.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
17	8.0	7.0	7.5	5.0	4.0	4.5	4.5	4.0	4.5	5.0	4.5	4.5
18	7.5	6.5	7.0	4.0	3.5	4.0	4.0	4.0	4.0	5.0	5.0	5.0
19	8.5	7.5	8.0	3.5	3.5	3.5	4.0	3.5	4.0	5.0	5.0	5.0
20	8.0	7.5	7.5	3.5	2.5	3.0	3.5	3.5	3.5	5.0	5.0	5.0
21	7.5	7.5	7.5	2.5	2.0	2.0	4.0	3.5	4.0	5.0	4.5	4.5
22	8.5	7.5	8.0	3.0	2.0	2.5	4.5	4.0	4.0	4.5	4.0	4.0
23	8.5	7.5	8.0	3.0	2.0	2.5	4.0	4.0	4.0	4.0	4.0	4.0
24	8.0	7.5	7.5	3.5	2.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0
25	7.5	7.0	7.0	4.0	2.5	3.5	4.0	3.5	4.0	4.5	4.0	4.5
26	7.0	6.5	7.0	4.5	4.0	4.0	3.5	3.5	3.5	4.5	4.0	4.0
27	7.0	6.5	6.5	4.5	4.5	4.5	3.5	3.0	3.0	4.5	4.0	4.0
28	7.0	7.0	7.0	4.5	4.5	4.5	3.5	3.0	3.5	4.5	4.5	4.5
29	7.0	6.5	7.0	4.5	4.5	4.5	4.0	3.5	4.0	4.5	4.5	4.5
30	6.5	6.0	6.5	4.5	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
31	6.5	6.0	6.5	---	---	---	4.0	2.5	3.0	4.0	4.0	4.0
MONTH	9.0	6.0	7.5	6.5	2.0	4.5	5.5	2.5	4.0	5.0	2.0	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	2.5	3.5	4.0	3.5	3.5	5.5	5.0	5.5	7.5	6.0	6.5
2	3.5	2.5	3.0	3.5	3.0	3.0	6.0	5.0	5.5	8.0	6.5	7.0
3	4.0	3.5	3.5	3.5	3.0	3.0	5.0	4.5	4.5	6.5	5.5	6.0
4	4.5	4.0	4.0	4.5	3.5	4.0	5.5	4.5	5.0	6.5	5.0	6.0
5	4.5	4.0	4.5	4.5	4.0	4.5	4.5	3.0	3.5	7.0	4.5	6.0
6	4.5	4.0	4.5	4.5	4.0	4.5	5.0	3.5	4.0	7.5	5.0	6.5
7	4.5	4.5	4.5	4.5	4.0	4.0	5.0	4.0	4.5	8.0	6.0	7.0
8	4.5	4.0	4.0	5.0	4.0	4.5	5.5	4.0	5.0	8.5	6.5	7.5
9	4.0	4.0	4.0	5.0	4.5	4.5	6.0	4.5	5.5	8.0	7.0	7.5
10	4.0	3.5	4.0	5.0	4.5	5.0	6.5	5.0	6.0	7.0	6.0	6.5
11	4.0	3.5	3.5	5.0	5.0	5.0	6.0	5.0	5.5	7.0	5.5	6.0
12	3.5	3.5	3.5	5.0	4.5	4.5	5.5	4.0	5.0	6.5	6.0	6.0
13	4.0	3.5	4.0	4.5	3.5	4.0	5.5	5.0	5.0	6.0	5.5	6.0
14	4.0	3.5	4.0	4.5	3.5	4.0	5.5	5.0	5.0	5.5	5.0	5.5
15	4.0	3.5	3.5	4.5	4.0	4.5	5.5	5.0	5.0	6.5	5.5	6.0
16	4.0	3.5	4.0	5.0	4.5	5.0	5.5	4.5	5.0	7.5	5.5	6.5
17	4.5	4.0	4.0	5.5	4.5	5.0	5.0	4.5	4.5	7.5	6.0	7.0
18	4.5	4.0	4.5	5.5	4.5	5.0	5.0	4.5	4.5	8.5	6.0	7.0
19	4.5	4.5	4.5	6.0	5.0	5.5	5.0	4.5	5.0	9.0	6.5	8.0
20	4.5	4.0	4.5	6.0	5.0	5.5	5.5	4.5	5.0	9.0	7.0	8.0
21	5.0	4.5	5.0	6.0	5.0	5.5	5.0	4.5	5.0	7.5	6.0	7.0
22	5.0	4.5	5.0	6.5	5.5	6.0	5.0	3.5	4.5	6.5	5.5	6.0
23	5.0	5.0	5.0	6.0	4.5	5.5	6.0	4.0	5.0	6.5	5.0	6.0
24	5.0	4.5	4.5	5.0	4.5	4.5	6.5	5.0	5.5	7.0	5.5	6.0
25	4.5	4.0	4.5	5.0	4.5	5.0	6.5	5.5	6.0	6.5	5.5	6.0
26	5.0	4.5	4.5	6.0	5.0	5.5	6.0	6.0	6.0	6.5	6.0	6.0
27	4.5	4.0	4.5	6.0	5.5	5.5	7.0	5.5	6.0	7.0	6.0	6.5
28	4.0	4.0	4.0	6.0	5.5	5.5	7.0	5.5	6.5	7.0	6.0	6.5
29	---	---	---	6.5	5.5	6.0	7.0	5.5	6.0	7.5	5.5	6.5
30	---	---	---	6.5	5.5	6.0	6.5	5.5	6.0	8.5	5.5	7.0
31	---	---	---	6.0	5.0	5.5	---	---	---	9.0	6.5	9.0
MONTH	5.0	2.5	4.0	6.5	3.0	5.0	7.0	3.0	5.0	9.0	4.5	6.5

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.5	7.0	8.0	12.0	9.5	11.0	13.5	11.5	12.5	11.0	10.5	10.5
2	10.0	7.0	8.5	11.0	10.0	10.0	14.0	11.5	12.5	10.5	10.0	10.5
3	10.0	7.5	8.5	10.0	9.5	10.0	14.0	12.0	13.0	10.0	9.5	10.0
4	10.0	7.5	9.0	10.0	9.5	10.0	14.5	12.5	13.0	10.0	9.5	10.0
5	10.5	8.0	9.0	11.5	9.5	10.5	14.0	12.0	13.0	10.0	9.0	9.5
6	10.0	7.5	8.5	12.0	9.5	11.0	14.0	11.5	12.5	10.0	9.0	9.5
7	10.0	7.5	9.0	12.5	10.0	11.5	14.5	11.5	13.0	9.5	8.5	9.0
8	10.0	8.0	9.0	11.5	10.5	11.0	14.5	12.0	13.0	9.0	9.0	9.0
9	9.0	7.5	8.0	11.0	10.0	10.5	15.0	12.5	13.5	10.0	9.0	9.5
10	8.0	7.0	7.5	10.0	9.5	10.0	13.0	12.0	12.5	9.5	9.0	9.0
11	8.5	7.5	8.0	10.0	9.5	10.0	12.5	11.5	12.0	9.5	8.5	9.0
12	8.5	7.5	8.0	11.5	9.0	10.5	12.0	11.0	11.5	9.5	8.5	9.0
13	8.0	7.5	7.5	12.5	10.0	11.0	12.0	10.5	11.5	9.0	9.0	9.0
14	8.5	7.0	7.5	12.5	10.5	11.5	11.5	11.0	11.0	9.5	9.0	9.0
15	8.0	6.5	7.5	13.0	11.0	12.0	13.0	11.0	12.0	9.5	8.5	9.0
16	8.5	7.5	8.0	12.0	11.0	11.5	12.0	11.0	11.5	8.5	7.5	8.0
17	10.0	7.5	8.5	11.0	10.5	11.0	12.5	10.0	11.0	8.0	7.0	7.5
18	10.5	8.0	9.0	12.5	10.0	11.0	11.5	10.5	11.0	8.0	7.0	7.5
19	10.5	8.5	9.5	12.5	10.5	11.5	11.0	10.5	11.0	8.5	7.5	8.0
20	11.0	8.0	9.5	12.5	10.5	11.5	11.5	10.5	11.0	8.5	8.0	8.0
21	11.5	9.0	10.0	13.0	10.5	12.0	11.5	10.5	11.0	8.0	8.0	8.0
22	9.5	8.5	9.0	13.5	11.0	12.5	11.5	10.5	11.0	8.0	8.0	8.0
23	10.0	8.5	9.0	14.0	11.5	12.5	10.5	10.5	10.5	8.5	8.0	8.5
24	9.0	8.5	9.0	13.5	11.5	12.5	10.5	10.0	10.0	9.0	8.5	9.0
25	9.5	8.5	9.0	14.0	11.5	12.5	10.0	9.5	10.0	9.5	9.0	9.0
26	11.0	8.5	9.5	12.5	12.0	12.0	10.5	9.5	10.0	10.0	9.0	9.5
27	11.5	9.0	10.0	12.5	11.5	12.0	10.5	9.5	10.0	9.5	9.0	9.5
28	12.0	9.5	11.0	13.0	11.0	12.0	11.5	10.0	10.5	9.0	9.0	9.0
29	11.5	10.0	11.0	13.5	11.0	12.5	11.5	10.0	11.0	9.5	9.0	9.0
30	11.5	9.5	10.5	14.0	11.5	12.5	12.0	11.0	11.5	9.5	9.0	9.0
31	---	---	---	13.5	11.5	12.5	11.5	11.0	11.0	---	---	---
MONTH	12.0	6.5	9.0	14.0	9.0	11.5	15.0	9.5	11.5	11.0	7.0	9.0
YEAR	15.0	2.0	7.0									

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'25", long 123°13'20", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream face of Cushman Dam No. 1, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi² (242.7 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
14...	1050	1.0	63	7.3	10.1	0	10.3
14...	1100	20	65	7.3	10.1	0	10.4
14...	1110	50	65	7.3	9.9	0	10.1
14...	1115	100	43	7.1	9.0	0	8.7
14...	1120	220	75	7.1	6.1	1	2.4
DEC							
08...	1055	1.0	61	7.3	7.1	1	10.2
08...	1105	20	61	7.3	7.3	0	10.2
08...	1115	50	61	7.3	7.3	0	10.1
08...	1120	100	62	7.3	7.3	0	10.0
08...	1130	200	67	7.4	6.1	1	4.6
JAN , 1978							
12...	1005	1.0	65	7.4	6.0	0	11.2
12...	1020	20	64	7.4	5.7	0	11.1
12...	1030	50	62	7.3	5.6	0	11.1
12...	1040	100	63	7.4	5.6	0	11.1
12...	1050	200	63	7.4	5.6	1	11.0
FEB							
07...	1115	1.0	57	7.2	5.7	0	11.4
07...	1125	20	57	7.5	5.6	0	11.4
07...	1135	50	57	7.5	5.6	0	11.4
07...	1145	100	57	7.4	5.4	0	11.3
07...	1155	140	56	7.2	5.2	0	11.2
MAR							
09...	1010	1.0	56	7.4	5.8	0	11.6
09...	1020	20	57	7.4	5.7	0	11.7
09...	1030	50	58	7.4	5.4	0	11.5
09...	1040	100	58	7.4	5.2	0	11.3
09...	1050	200	59	7.4	5.1	0	11.1
APR							
06...	1035	1.0	60	7.7	8.3	0	11.6
06...	1045	20	61	7.8	8.1	0	11.7
06...	1055	50	61	7.8	7.8	0	11.7
06...	1105	100	62	7.9	5.6	0	11.5

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
14...	15	<1	.00	.02	.06	.00	.00
14...	22	2	.00	.02	.06	.00	.00
14...	30	1	.01	.02	.08	.01	.00
14...	29	<1	.01	.02	.05	.00	.00
14...	8	<4	.08	.09	.17	.01	.00
DEC							
08...	K5	<1	.02	.01	.05	.01	.00
08...	K2	<1	.03	.01	.05	.00	.00
08...	K7	<1	.02	.01	.06	.00	.00
08...	K8	1	.03	.02	.06	.00	.00
08...	K8	<1	.09	.03	.15	.01	.00
JAN , 1978							
12...	K2	<1	.04	.03	.04	.01	.00
12...	K2	<1	.04	.02	.05	.01	.00
12...	K2	<1	.09	.02	.05	.01	.00
12...	K3	<1	.12	.03	.04	.00	.00
12...	K3	1	.16	.02	.05	.01	.00
FEB							
07...	25	<1	.02	.04	.08	.01	.00
07...	4	<1	.02	.02	.05	.00	.00
07...	8	<1	.02	.04	.07	.00	.00
07...	4	1	.03	.02	.08	.00	.00
07...	5	<1	.03	.02	.05	.00	.00
MAR							
09...	2	<1	.01	.02	.06	.01	.00
09...	<1	<1	.01	.02	.03	.01	.00
09...	1	<1	.01	.02	.08	.02	.00
09...	<1	<1	.03	.02	.06	.01	.00
09...	<1	<1	.03	.03	.03	.01	.00
APR							
06...	<1	<1	.01	.02	.10	.00	.00
06...	2	<1	.00	.01	.07	.01	.00
06...	<1	<1	.00	.07	.09	.00	.00
06...	<1	<1	.01	.02	.07	.00	.00

K Results based upon colony counts outside the ideal range.

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
APR , 1978							
06...	1115	200	64	7.6	5.1	0	11.2
MAY							
04...	1110	1.0	59	7.6	10.6	0	11.4
04...	1125	20	58	7.5	10.2	0	11.4
04...	1130	50	58	7.6	9.3	0	11.7
04...	1135	100	60	7.4	6.1	0	11.2
04...	1145	210	61	7.0	5.1	1	9.9
JUN							
15...	1050	1.0	--	7.5	16.5	0	9.6
15...	1055	20	--	7.5	15.9	0	9.6
15...	1105	50	--	7.5	10.7	0	11.3
15...	1110	100	--	7.2	6.8	0	10.5
15...	1120	220	--	7.0	5.6	0	9.5
JUL							
20...	1250	1.0	61	7.3	20.0	0	9.0
20...	1300	20	62	7.4	18.7	0	9.6
20...	1310	50	63	7.4	12.3	0	11.3
20...	1320	100	65	7.0	7.1	0	10.1
20...	1330	220	64	6.8	5.5	0	8.7
AUG							
17...	1135	1.0	64	7.6	19.8	0	9.2
17...	1145	20	64	7.5	19.6	0	9.0
17...	1150	50	65	7.4	13.5	0	10.4
17...	1200	100	66	6.7	7.1	0	9.8
17...	1210	220	67	6.4	5.5	0	9.5
SEP							
12...	0955	1.0	62	7.2	16.6	0	9.4
12...	1000	20	62	7.2	16.6	0	8.8
12...	1010	50	65	7.2	14.0	0	10.1
12...	1015	100	64	6.9	8.4	0	10.2
12...	1025	220	68	6.8	5.6	0	7.2

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
APR , 1978							
06...	<1	<1	.02	.02	.06	.01	.00
MAY							
04...	<1	<1	.00	.01	.04	.00	.00
04...	<1	<1	.00	.02	.06	.01	.00
04...	1	<1	.00	.01	.06	.00	.00
04...	<1	<1	.02	.02	.06	.00	.00
04...	<1	<1	.05	.02	.08	.01	.00
JUN							
15...	2	<1	.00	.01	.02	.00	.00
15...	6	<1	.00	.02	.06	.00	.00
15...	2	<1	.00	.01	.05	.00	.00
15...	<9	<1	.02	.02	.02	.00	.00
15...	240	<1	.05	.02	.10	.00	.00
JUL							
20...	<1	<1	.00	.01	.07	.00	.00
20...	K110	<1	.00	.01	.07	.00	.00
20...	K3	<1	.00	.01	.04	.01	.00
20...	K1	<1	.01	.01	.02	.00	.00
20...	K6	<1	.04	.01	.03	.00	.00
AUG							
17...	6	<1	.00	.01	.07	.01	.00
17...	K91	<1	.00	.01	.07	.00	.00
17...	520	<1	.00	.01	.01	.00	.00
17...	94	<1	.01	.02	.04	.00	.00
17...	5	<1	.04	.02	.06	.00	.00
SEP							
12...	75	4	.00	.01	.08	.01	.00
12...	95	5	.00	.01	.08	.01	.00
12...	51	<1	.00	.02	.13	.00	.00
12...	21	<1	.00	.02	.07	.00	.00
12...	4400	<1	.04	.02	.08	.00	.00

K Results based upon colony counts outside the ideal range.

12057500 NORTH FORK SKOKOMISH RIVER NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'24", long 123°13'16", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on Lake Cushman at city of Tacoma dam, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi² (242.7 km²).

PERIOD OF RECORD.--August 1910 to September 1911 (fragmentary) and February 1913 to current year (monthly discharge only). Records of estimated monthly discharge only October 1911 to January 1913 in files of Tacoma district office.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Discharge determined from record of power output and Lake Cushman elevations, plus spillway discharge when present. Prior to Sept. 23, 1911, nonrecording gage and February 1913 to September 1923, water-stage recorder, at approximately same site, at datum 486.4 ft (148.25 m) National Geodetic Vertical Datum of 1929 prior to Sept. 2, 1918, and at datum 5.00 ft (1.524 m) higher Sept. 2, 1918, to September 1923, levels by city of Tacoma. October 1923 to September 1930 water-stage recorder 1 mi (1.6 km) downstream at different datum.

REMARKS.--Records fair. No diversion of consequence. Flow regulated in Lake Cushman since October 1925 for power by city of Tacoma.

COOPERATION.--Records of power output, spill, and elevations of Lake Cushman furnished by city of Tacoma.

AVERAGE DISCHARGE.--67 years (water years 1912-78), 761 ft³/s (21.55 m³/s), 110.29 in/yr (2,801 mm/yr) 551,300 acre-ft/yr (680 hm³/yr) adjusted for storage.

EXTREMES.--Not determined since regulation began in Lake Cushman.

MONTHLY DISCHARGE, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Month	Observed				Change in contents in Lake Cushman (acre-feet)	Adjusted for change in reservoir contents			
	Maximum (cfs)	Minimum (cfs)	Mean (cfs)	Runoff in acre-feet		Mean (cfs)	Per square mile	Runoff in inches	Runoff in acre-feet
October	1,120	0	699	43,000	-6,290	597	6.37	7.35	36,710
November	2,220	414	1,427	84,900	+10,360	1,601	17.1	19.06	95,260
December	2,060	1,540	1,796	110,400	-5,920	1,699	18.1	20.91	104,500
CAL YR 1977	2,220	0	599	433,900	+62,760	686	7.32	99.39	496,700
January	2,160	131	1,664	102,300	-23,640	1,279	13.6	15.74	78,660
February	1,670	113	890	49,450	+10,080	1,072	11.4	11.91	59,530
March	1,800	488	1,101	67,700	-13,320	884	9.43	10.88	54,380
April	923	0	352	20,940	+25,030	773	8.25	9.20	45,970
May	1,120	0	223	13,710	+32,470	751	8.01	9.24	46,180
June	564	0	66.5	3,960	+32,900	620	6.62	7.38	36,860
July	651	0	275	16,920	+800	288	3.07	3.55	17,720
August	1,860	0	489	30,080	-9,500	335	3.58	4.12	20,580
September	2,510	145	1,064	63,340	-10,480	889	9.49	10.58	52,860
WTR YR 1978	2,510	0	838	606,700	+42,490	897	9.57	129.90	649,200

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA

LOCATION.--Lat 47°23'52", long 123°11'57", in SE¼NW¼ sec.16, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110018. Samples taken at log boom, approximately 300 ft (91 m).

DRAINAGE AREA.--99.2 mi² (256.9 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
14...	1210	1.0	66	7.0	8.7	0	8.7
14...	1220	20	65	7.0	8.3	0	8.5
14...	1225	50	66	7.0	8.3	1	8.5
14...	1230	110	66	6.8	6.4	0	5.5
DEC							
08...	1220	1.0	68	7.1	6.9	0	9.4
08...	1230	20	60	7.4	7.1	0	9.3
08...	1235	50	60	7.2	7.1	0	9.4
08...	1245	130	60	7.2	6.8	0	8.9
JAN , 1978							
12...	1145	1.0	60	7.2	6.2	0	11.2
12...	1200	20	60	7.5	5.8	0	11.2
12...	1210	50	60	7.3	5.8	0	11.1
12...	1220	110	61	7.3	5.8	0	11.1
FEB							
07...	1300	1.0	56	7.2	6.1	0	11.3
07...	1310	20	55	7.4	5.3	0	11.3
07...	1320	50	57	7.5	5.4	0	11.3
07...	1330	150	57	7.3	5.4	0	11.2
MAR							
09...	1130	1.0	58	7.3	6.1	0	11.5
09...	1140	20	58	7.4	5.6	0	11.5
09...	1150	50	58	7.4	5.4	0	11.4
09...	1200	150	58	7.4	5.4	0	11.3
APR							
06...	1225	1.0	61	7.5	7.8	0	11.4
06...	1230	20	61	7.6	6.6	0	11.4
06...	1240	50	62	7.6	6.0	0	11.3
06...	1250	105	62	7.6	5.7	0	10.7
MAY							
04...	0945	1.0	61	7.5	9.9	0	11.2
04...	0955	20	61	7.5	7.8	0	11.5
04...	1005	50	62	7.5	6.6	0	11.2
04...	1015	105	62	7.4	5.8	0	10.6

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
14...	61	1	.01	.01	.06	.00	.00
14...	37	1	.01	.02	.05	.00	.00
14...	59	<1	.01	.02	.06	.00	.00
14...	34	<1	.01	.01	.08	.00	.00
DEC							
08...	K11	<1	.04	.02	.05	.01	.00
08...	K25	<1	.04	.02	.06	.00	.00
08...	K10	<1	.04	.02	.05	.00	.00
08...	K28	<1	.06	.02	.30	.00	.00
JAN , 1978							
12...	K23	1	.13	.02	.05	.01	.00
12...	K5	<1	.12	.02	.05	.00	.00
12...	K2	<1	.12	.02	.02	.01	.00
12...	K3	<1	.14	.02	.04	.01	.00
FEB							
07...	K82	<1	.03	.01	.08	.00	.00
07...	52	<1	.03	.01	.09	.00	.00
07...	23	<1	.03	.02	.06	.00	.00
07...	16	<1	.03	.02	.03	.00	.00
MAR							
09...	8	<1	.02	.02	.09	.00	.00
09...	17	<1	.02	.02	.05	.00	.00
09...	17	<1	.02	.02	.04	.01	.00
09...	28	<1	.06	.02	.06	.01	.00
APR							
06...	4	<1	.01	.02	.08	.01	.00
06...	15	<1	.01	.03	.10	.01	.00
06...	23	<1	.06	.07	.10	.01	.00
06...	63	<1	.01	.02	.08	.01	.00
MAY							
04...	1	<1	.02	.02	.08	.00	.00
04...	1	<1	.02	.02	.04	.00	.00
04...	1	<1	.02	.04	.06	.00	.00
04...	13	<1	.04	.04	.04	.00	.00

K Results based upon colony counts outside the ideal range.

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
JUN , 1978							
15...	0940	1.0	67	7.5	15.0	0	9.9
15...	0950	20	65	7.5	8.3	1	11.0
15...	1000	50	65	7.4	7.1	1	10.7
15...	1005	110	62	7.4	6.2	0	9.5
JUL							
20...	1115	1.0	62	7.4	16.2	0	10.1
20...	1130	20	63	7.2	8.0	0	10.2
20...	1135	50	64	7.2	7.5	0	10.1
20...	1145	100	62	7.2	7.3	0	10.0
AUG							
17...	1015	1.0	63	7.6	15.1	0	9.8
17...	1020	20	64	7.3	9.3	0	9.5
17...	1030	50	66	7.2	8.0	0	10.0
17...	1040	--	66	7.0	6.0	0	8.0
SEP							
12...	0850	1.0	59	7.0	9.0	0	9.5
12...	0855	2.0	59	7.0	8.4	0	9.5
12...	0900	50	59	6.8	8.3	0	9.2
12...	0910	120	67	6.7	6.1	1	7.0

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
JUN , 1978							
15...	450	<1	.00	.02	.08	.01	.00
15...	K800	1	.00	.03	.08	.01	.00
15...	9	<1	.02	.02	.05	.01	.00
15...	16	<1	.04	.03	.07	.01	.00
JUL							
20...	K7	K2	.00	.01	.05	.01	.00
20...	59	<1	.01	.01	.04	.00	.00
20...	42	<1	.01	.01	.04	.00	.00
20...	K14	<1	.01	.01	.07	.00	.00
AUG							
17...	8	<1	.01	.02	.05	.00	.00
17...	10	<1	.00	.02	.06	.01	.00
17...	<1	<1	.01	.02	.10	.01	.00
17...	63	<1	.05	.02	.08	.00	.00
SEP							
12...	39	<1	.01	.02	.11	.00	.00
12...	58	<1	.01	.02	.08	.34	.00
12...	95	<1	.02	.02	.08	.01	.00
12...	4	<1	.06	.02	.09	.01	.00

K Results based upon colony counts outside the ideal range.

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE¼NW¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi (1.8 km) upstream from South Fork Skokomish River, 5.4 mi (8.7 km) southwest of Potlatch, 7.2 mi (11.6 km) downstream from city of Tacoma's Cushman Dam No. 2, and at mile 10.1 (16.3 km).

DRAINAGE AREA.--117 mi^2 (303 km^2), includes 99 mi^2 (256 km^2) above Cushman Dam No. 2 which is normally non-contributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1944 to November 1949, March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft (19.352 m) National geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to Nov. 27, 1949 (destroyed by flood of Nov. 27, 1949), and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft (61 m) downstream at present datum.

REMARKS.--Water-discharge records good. Entire flow of river normally diverted at Cushman Dam No. 2 to supply power-plant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (see sta 12057500) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft^3/s (219 m^3/s) Nov. 4, 1955, gage height, 10.45 ft (3.185 m); minimum recorded, 1.3 ft^3/s (0.037 m^3/s) Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,060 ft^3/s (30.0 m^3/s) Nov. 1, gage height, 4.55 ft (1.387 m); minimum, 7.5 ft^3/s (0.21 m^3/s) Aug. 30, 31; minimum gage height, 2.08 ft (0.634 m) Aug. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	540	196	74	129	63	76	59	49	24	15	21
2	17	455	285	72	220	61	76	57	47	24	15	25
3	15	227	234	110	293	59	83	54	44	25	14	16
4	15	146	175	162	210	57	78	52	43	25	13	16
5	15	113	146	210	172	56	105	50	41	25	13	13
6	15	98	220	192	162	56	110	49	40	23	12	12
7	14	89	210	261	199	113	96	47	37	22	12	11
8	13	74	169	525	249	115	89	46	35	22	12	21
9	13	103	143	397	227	98	80	44	37	23	12	83
10	13	224	297	297	178	87	76	47	36	22	12	74
11	12	182	826	224	149	80	70	50	41	21	12	52
12	13	159	640	175	129	76	68	49	38	20	15	41
13	12	213	742	162	115	78	65	93	38	20	15	36
14	12	530	634	192	115	70	61	118	38	19	14	32
15	12	347	545	178	113	66	63	153	38	19	15	27
16	12	231	424	165	101	63	66	115	37	20	15	24
17	13	169	297	146	96	61	65	96	33	20	14	22
18	13	132	224	132	91	59	72	83	32	19	12	20
19	12	113	178	135	85	57	85	74	32	19	12	19
20	12	98	149	123	80	56	89	66	32	20	12	18
21	13	87	132	175	76	52	87	63	31	17	12	20
22	12	78	121	165	74	50	115	61	30	16	12	49
23	20	80	110	140	70	61	108	57	30	15	11	87
24	33	87	98	123	70	83	96	56	29	15	9.7	76
25	43	321	91	115	80	265	87	52	27	15	9.7	59
26	41	374	85	105	72	169	80	63	27	16	9.0	49
27	32	253	80	96	70	126	76	74	26	17	9.0	41
28	33	206	83	89	66	110	70	66	25	16	9.7	37
29	84	273	96	83	---	96	66	61	25	15	8.5	35
30	234	196	85	78	---	85	63	56	25	14	8.0	33
31	153	---	78	80	---	80	---	52	---	14	8.0	---
TOTAL	969	6198	7793	5181	3691	2608	2421	2063	1043	602	372.6	1069
MEAN	31.3	207	251	167	132	84.1	80.7	66.5	34.8	19.4	12.0	35.6
MAX	234	540	826	525	293	265	115	153	49	25	15	87
MIN	12	74	78	72	66	50	61	44	25	14	8.0	11
AC-FT	1920	12290	15460	10280	7320	5170	4800	4090	2070	1190	739	2120

CAL YR 1977 TOTAL 26646.4 MEAN 73.0 MAX 826 MIN 6.2 AC-FT 52850
WTR YR 1978 TOTAL 34010.6 MEAN 93.2 MAX 826 MIN 8.0 AC-FT 67460

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH.--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to current year.

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--Interruptions in record due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C July 8, 1968; minimum, 1.0°C Dec. 27, 1965, Dec. 31, 1968, Jan. 23, 31, Feb. 7, 1969, Jan. 14, 15, 1971.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.0°C June 28, July 21-23, 25, Aug. 9; minimum, 3.5°C Jan. 2.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.0	10.0	10.5	10.0	8.5	9.0	8.0	7.0	7.5	4.5	4.0	4.0
2	11.0	9.5	10.0	9.0	8.0	8.5	8.5	8.0	8.5	4.5	3.5	4.0
3	10.5	8.0	9.5	8.5	7.5	8.0	8.0	7.5	8.0	5.0	4.5	4.5
4	10.0	8.0	9.0	8.5	8.0	8.0	7.0	6.5	7.0	6.0	5.5	5.5
5	10.0	8.5	9.0	9.0	8.0	8.5	6.5	6.0	6.5	6.5	6.0	6.0
6	9.5	9.0	9.0	8.5	8.0	8.0	7.0	6.0	6.5	6.0	6.0	6.0
7	10.5	8.5	9.5	8.0	7.0	7.5	6.5	6.0	6.5	6.0	5.5	6.0
8	10.5	9.0	10.0	7.5	6.5	7.0	6.0	5.5	6.0	7.0	6.0	6.5
9	10.5	9.0	10.0	7.5	7.0	7.0	6.0	5.5	5.5	7.0	7.0	7.0
10	10.5	9.5	10.0	8.5	7.5	8.0	7.0	6.0	6.0	7.5	7.0	7.0
11	10.5	9.0	9.5	8.5	8.0	8.5	7.5	7.0	7.5	7.5	7.0	7.5
12	10.0	8.5	9.5	8.5	8.0	8.5	7.5	7.0	7.5	7.5	7.0	7.5
13	11.5	10.0	10.5	8.5	8.0	8.5	8.0	7.0	7.5	7.0	7.0	7.0
14	10.0	8.0	9.0	8.5	8.0	8.5	8.0	8.0	8.0	7.5	7.0	7.5
15	10.5	9.0	9.5	8.5	8.0	8.0	8.0	7.5	8.0	8.0	7.5	7.5
16	11.5	9.5	10.5	8.0	7.5	7.5	7.5	7.0	7.0	7.5	7.0	7.5
17	10.0	8.0	9.0	7.5	6.5	7.0	7.5	7.0	7.0	7.5	7.0	7.5
18	9.5	8.0	9.0	7.0	6.0	6.5	7.0	6.5	7.0	7.5	7.5	7.5
19	10.5	9.5	10.0	6.0	5.0	5.5	6.5	6.0	6.5	8.0	7.5	7.5
20	10.0	9.0	9.5	5.5	4.5	5.0	6.0	5.5	6.0	8.0	7.5	8.0
21	10.0	9.0	9.5	4.5	4.0	4.5	6.5	6.0	6.0	8.0	7.0	7.5
22	10.5	9.5	10.0	5.0	4.5	5.0	6.5	6.0	6.0	7.0	6.0	6.5
23	11.0	9.5	10.5	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.0
24	10.0	9.0	9.5	6.0	5.0	5.5	6.5	5.5	6.0	6.0	5.5	6.0
25	10.0	9.5	9.5	7.0	6.0	6.5	6.5	5.5	6.0	6.5	6.0	6.5
26	9.5	9.0	9.0	7.5	6.5	7.0	5.5	5.0	5.0	7.0	6.0	6.5
27	9.5	8.5	9.0	8.0	7.5	7.5	5.0	4.5	5.0	7.0	6.0	6.5
28	9.5	9.0	9.0	7.5	7.5	7.5	5.0	4.5	5.0	7.0	6.5	7.0
29	9.5	9.0	9.5	7.5	7.0	7.5	6.0	5.0	6.0	7.0	6.0	6.5
30	9.5	8.5	9.0	7.5	7.0	7.0	6.0	6.0	6.0	6.5	5.5	6.0
31	9.0	8.0	8.5	---	---	---	6.0	4.5	5.0	6.5	6.0	6.0
MONTH	11.5	8.0	9.5	10.0	4.0	7.0	8.5	4.5	6.5	8.0	3.5	6.5

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH.--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.0	6.5	7.5	5.0	6.0	9.0	8.0	8.5	11.5	8.5	9.5
2	7.0	6.0	6.5	6.5	5.0	5.5	10.0	8.0	8.5	12.5	8.5	10.0
3	7.5	7.0	7.0	---	---	---	9.0	8.0	8.0	11.5	8.0	9.5
4	7.5	7.0	7.5	---	---	---	9.5	8.0	8.5	10.0	7.5	8.5
5	7.5	7.5	7.5	---	---	---	8.5	7.0	7.5	11.0	6.5	8.5
6	7.5	7.5	7.5	---	---	---	9.5	6.5	7.5	12.5	7.0	9.0
7	7.5	7.0	7.5	7.5	7.0	7.0	10.0	6.0	8.0	12.5	7.5	9.5
8	7.5	7.0	7.0	8.5	6.5	7.5	10.0	7.0	8.0	12.5	8.5	10.0
9	7.0	6.0	7.0	8.0	6.5	7.0	11.0	7.0	8.5	12.5	9.5	10.5
10	6.5	6.0	6.0	8.5	6.0	7.0	11.5	7.5	9.0	9.5	8.5	9.0
11	6.5	5.5	6.0	8.5	7.0	7.5	11.5	7.0	8.5	11.0	8.0	9.5
12	6.0	5.0	5.5	8.0	6.5	7.0	10.0	6.5	8.0	10.0	8.5	9.0
13	7.0	5.5	6.5	8.5	6.0	7.0	10.0	7.0	8.5	9.5	8.5	9.0
14	7.0	6.0	6.5	8.5	5.5	6.5	8.5	7.5	8.0	9.5	8.5	9.0
15	7.0	6.0	6.0	8.0	6.0	7.0	10.0	7.5	8.5	10.5	8.5	9.5
16	6.5	5.5	6.0	9.0	6.0	7.5	9.5	8.0	8.5	10.5	8.0	9.0
17	7.0	6.5	6.5	9.5	6.0	7.5	8.0	7.5	7.5	10.5	8.5	9.5
18	7.5	7.0	7.5	10.0	6.5	7.5	9.0	7.5	8.0	12.5	8.0	10.0
19	8.5	7.5	8.0	8.5	6.5	7.5	9.0	8.0	8.0	13.5	8.5	10.5
20	8.5	6.5	7.5	10.0	6.5	8.0	9.0	7.5	8.0	14.0	9.5	11.5
21	9.0	7.0	8.0	10.5	7.0	8.5	8.5	7.0	7.5	12.5	9.0	10.5
22	8.5	7.5	8.0	10.5	7.0	8.5	8.0	7.0	7.5	11.5	8.0	9.5
23	9.5	7.5	8.0	9.0	8.5	8.5	10.0	6.5	8.0	10.5	8.0	9.0
24	7.5	7.0	7.0	8.5	8.0	8.5	10.0	8.0	9.0	11.0	8.0	9.5
25	7.5	7.0	7.5	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.0	9.0
26	8.0	7.0	7.5	9.5	8.0	8.5	9.5	9.0	9.0	9.5	8.5	9.0
27	8.0	6.5	7.0	9.5	8.0	8.5	10.0	8.5	9.5	10.5	9.0	9.5
28	7.0	5.5	6.5	9.5	8.0	8.5	10.5	8.5	9.5	10.5	8.5	9.5
29	---	---	---	9.5	8.0	9.0	11.0	8.0	9.5	11.5	8.5	9.5
30	---	---	---	10.5	8.5	9.0	10.5	8.5	9.0	13.0	8.0	10.0
31	---	---	---	11.0	8.0	9.0	---	---	---	14.0	8.5	11.0
MONTH	9.5	5.0	7.0	11.0	5.0	7.5	11.5	6.0	8.5	14.0	6.5	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.5	9.5	11.5	16.5	11.5	13.5	15.5	12.0	13.5	13.0	12.0	12.5
2	15.0	9.5	12.0	13.5	12.0	12.5	16.5	12.0	14.0	13.5	12.0	12.5
3	15.5	10.5	12.5	13.5	11.5	12.5	16.5	12.0	14.0	12.5	11.5	12.0
4	16.0	11.0	13.0	12.5	11.0	11.5	16.0	12.5	14.0	13.5	11.5	12.0
5	16.5	11.0	13.0	13.5	11.0	12.0	16.0	11.5	13.5	13.0	11.0	12.0
6	15.0	11.0	13.0	15.5	11.0	13.0	16.5	12.0	14.0	13.0	11.0	12.0
7	14.5	11.0	12.5	16.0	11.5	13.5	16.5	12.0	14.0	13.5	10.5	11.5
8	15.0	10.5	12.0	14.0	12.0	12.5	16.5	12.0	14.5	11.5	11.0	11.0
9	13.0	10.5	11.5	14.0	11.5	12.5	17.0	12.5	14.5	11.5	11.5	11.5
10	13.5	9.5	11.5	14.0	11.0	12.5	16.5	12.0	14.0	12.5	11.0	11.5
11	12.5	10.5	11.5	13.0	11.5	12.0	14.0	12.5	13.0	13.0	11.0	12.0
12	12.5	10.0	11.0	15.5	10.5	12.5	13.5	11.5	12.5	12.0	10.5	11.5
13	12.0	10.0	11.0	16.5	11.0	13.5	14.0	11.0	12.5	12.0	11.0	11.0
14	13.0	9.5	11.0	15.5	11.5	13.5	13.0	11.5	12.0	12.5	11.0	12.0
15	13.5	10.0	11.5	15.0	12.0	13.5	15.5	12.0	13.5	13.0	10.5	11.5
16	12.0	10.5	11.0	13.5	12.0	12.5	14.5	11.5	13.0	11.5	9.5	10.5
17	15.0	9.5	12.0	13.0	11.5	12.0	15.0	11.0	12.5	11.5	9.5	10.5
18	15.0	10.0	12.0	15.0	11.0	12.5	13.0	11.5	12.5	12.0	9.0	10.5
19	15.5	10.0	12.5	16.0	11.5	13.5	13.0	11.0	12.0	12.0	9.5	10.5
20	16.0	10.5	12.5	16.5	11.5	14.0	13.0	11.5	12.5	11.0	10.0	10.5
21	16.0	11.0	13.0	17.0	12.0	14.0	14.5	11.5	13.0	11.0	10.0	10.5
22	12.0	10.5	11.5	17.0	12.0	14.5	13.5	11.5	12.5	11.0	10.5	10.5
23	15.0	10.5	12.5	17.0	12.5	14.5	12.5	11.5	12.0	11.0	10.5	11.0
24	13.5	11.0	12.0	16.5	12.0	14.0	13.5	11.5	12.0	11.5	10.5	11.0
25	13.0	11.0	12.0	17.0	12.0	14.5	13.5	11.0	12.0	12.0	10.5	11.5
26	15.0	11.0	12.5	14.5	13.0	13.0	14.0	11.0	12.5	13.0	10.5	11.5
27	16.0	10.5	13.0	14.0	12.0	13.0	13.5	11.0	12.0	12.0	10.5	11.5
28	17.0	11.0	13.5	15.0	11.5	13.0	15.0	12.0	13.0	11.5	10.5	11.0
29	14.5	12.0	13.0	16.5	12.0	14.0	15.0	11.5	13.0	13.0	11.0	11.5
30	15.5	12.0	13.5	16.5	12.0	14.0	15.5	12.0	13.5	13.0	11.0	11.5
31	---	---	---	16.0	12.0	13.5	13.5	12.5	13.0	---	---	---
MONTH	17.0	9.5	12.0	17.0	10.5	13.0	17.0	11.0	13.0	13.5	9.0	11.5
YEAR	17.0	3.5	9.5									

12060500 SOUTH FORK SKOKOMISH RIVER NEAR UNION, WA

LOCATION.--Lat 47°20'26", long 123°16'44", in SW¼NE¼ sec.2, T.21 N., R.5 W., Mason County, Hydrologic Unit 17110017, on right bank 3.0 mi (4.8 km) upstream from Vance Creek, 3.2 mi (5.1 km) upstream from confluence with North Fork and 8.5 mi (13.7 km) west of Union.

DRAINAGE AREA.--76.3 mi² (198 km²).

PERIOD OF RECORD.--August 1931 to current year.

REVISED RECORDS.--WSP 1216: 1950. WSP 1316: 1934(M), 1938(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 103.35 ft (31.501 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--47 years, 737 ft³/s (20.87 m³/s) 131.17 in/yr (3,332 mm/yr), 534,000 acre-ft/yr (658 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s (612 m³/s) Jan. 22, 1935, Nov. 26, 1949, gage height, 11.0 ft (3.35 m) from rating curve extended above 11,000 ft³/s (312 m³/s); minimum, 62 ft³/s (1.76 m³/s) Sept. 18, 1938; minimum gage height, 1.06 ft (0.323 m) Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Nov. 1	1900	*11,600	329	*6.66	2.030	Dec. 11	0200	8,590	243	5.94	1.811
Nov. 25	2000	7,100	201	5.50	1.676						

Minimum discharge, 95 ft³/s (2.69 m³/s) Aug. 22, gage height, 1.42 ft (0.433 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	5340	1590	635	700	468	566	440	440	205	112	526
2	265	3650	3230	590	1220	440	542	416	422	197	112	1010
3	247	1740	2340	892	2220	422	626	398	410	197	110	653
4	229	1180	1590	2030	1460	410	700	380	398	193	107	662
5	217	952	1220	2420	1260	398	870	362	386	185	107	526
6	213	840	1700	1720	1760	404	870	344	368	181	105	447
7	209	916	1860	1880	3140	1850	760	326	344	174	102	380
8	197	750	1230	4400	2940	1670	690	320	326	171	100	380
9	189	976	1000	2620	2440	976	626	326	344	167	100	2940
10	181	2320	2540	2010	1640	760	599	326	320	164	97	2990
11	171	1580	6110	1510	1220	653	566	386	338	160	100	1500
12	167	1450	4350	1230	1000	582	510	428	338	157	132	1070
13	171	2320	4430	1130	860	558	475	1150	374	153	120	820
14	160	3990	4950	1720	810	510	440	2160	447	150	107	671
15	157	2300	3800	1580	770	475	447	1830	447	147	120	566
16	150	1690	2810	1370	690	447	468	1130	398	147	115	496
17	147	1330	2030	1360	644	428	496	830	356	147	105	447
18	144	1060	1590	1130	617	416	680	680	332	144	102	410
19	141	892	1330	1190	626	398	1000	599	310	138	100	374
20	138	780	1120	1100	644	386	1120	558	295	135	100	350
21	141	700	1000	1770	626	374	904	518	280	132	97	380
22	144	635	904	1590	590	374	1020	468	270	129	102	770
23	380	608	820	1200	566	599	928	434	261	126	123	1360
24	590	608	750	1000	550	1320	790	416	247	126	1580	1000
25	1020	2680	690	880	590	3770	720	398	238	123	988	740
26	916	3010	644	800	566	1740	680	590	234	129	653	590
27	608	1760	599	710	526	1160	626	964	225	141	440	510
28	740	1510	617	653	496	964	558	840	217	129	362	461
29	2240	2280	988	599	---	800	503	635	213	120	300	428
30	3680	1420	820	566	---	690	475	534	209	117	261	398
31	1740	---	710	550	---	626	---	475	---	115	238	---
TOTAL	15982	51267	59362	42835	31171	25068	20255	19661	9787	4699	7297	23855
MEAN	516	1709	1915	1382	1113	809	675	634	326	152	235	795
MAX	3680	5340	6110	4400	3140	3770	1120	2160	447	205	1580	2990
MIN	138	608	599	550	496	374	440	320	209	115	97	350
CFSM	6.76	22.4	25.1	18.1	14.6	10.6	8.85	8.31	4.27	1.99	3.08	10.4
IN.	7.79	24.99	28.94	20.88	15.20	12.22	9.88	9.59	4.77	2.29	3.56	11.63
AC-FT	31700	101700	117700	84960	61830	49720	40180	39000	19410	9320	14470	47320

CAL YR 1977 TOTAL 251899 MEAN 690 MAX 6110 MIN 87 CFSM 9.04 IN 122.81 AC-FT 499600
WTR YR 1978 TOTAL 311239 MEAN 853 MAX 6110 MIN 97 CFSM 11.2 IN 151.74 AC-FT 617300

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE¼NW¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi (6.0 km) downstream from confluence of North and South Forks, 4.7 mi (7.6 km) southwest of Potlatch, and at mile 5.3 (8.5 km).

DRAINAGE AREA.--227 mi² (588 km²), includes 99 mi² (256 km²) above Cushman Dam No. 2 which is normally noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WRD Wash. 1972: 1968(M), 1971(M). WRD Wash. 1975: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft (3.252 m) National Geodetic Vertical Datum of 1929. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi (1.0 km) upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mile (1.0 km) upstream at datum 16.47 ft (5.020 m) National Geodetic Vertical Datum of 1929, used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--Water-discharge records excellent except those above 10,000 ft³/s (283 m³/s), which are poort. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 3, 1955, gage height, 12.6 ft (3.84 m) site and datum then in use; minimum, 125 ft³/s (3.54 m³/s), Sept. 14-17, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft (9.39 m) National Geodetic Vertical Datum of 1929, at site on left bank 150 ft (46 m) above old highway bridge, discharge, 18,600 ft³/s (527 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,500 ft³/s (467 m³/s) Nov. 1, gage height, 15.74 ft (4.798 m); minimum, 210 ft³/s (5.95 m³/s) part or all of each day Aug. 8-11, 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	452	6490	2070	884	1040	700	860	668	692	334	230	559
2	419	6960	4280	828	1860	668	828	636	652	328	230	1220
3	386	2660	3370	1050	3110	636	909	604	620	334	225	860
4	362	1810	2370	2250	2190	604	999	580	604	328	225	836
5	344	1440	1810	2790	1780	580	1210	552	580	322	220	716
6	332	1240	2280	2350	2170	573	1280	524	559	310	220	620
7	326	1310	2740	2190	3350	1740	1140	503	531	304	215	531
8	314	1110	1920	5560	3600	2140	1040	489	510	298	215	517
9	303	1240	1570	3660	3020	1350	945	482	531	298	210	2700
10	292	3140	2610	2770	2200	1090	884	489	503	292	210	3520
11	281	2350	9700	2140	1730	945	836	559	517	286	215	1950
12	275	1980	6670	1740	1440	852	772	604	524	286	235	1420
13	275	3020	6490	1560	1260	820	724	1380	524	274	235	1130
14	264	6010	7040	2030	1190	756	684	2470	628	268	225	936
15	254	3370	5320	2060	1150	708	676	2360	628	268	230	804
16	248	2410	4000	1790	1040	668	700	1600	580	268	230	708
17	243	1870	2810	1760	981	636	716	1220	531	268	225	652
18	243	1520	2190	1540	936	612	909	1040	503	262	220	588
19	233	1260	1810	1620	909	580	1220	909	475	262	220	538
20	233	1090	1560	1530	909	566	1420	836	454	256	215	524
21	233	963	1350	2240	876	545	1240	772	433	250	215	552
22	233	868	1200	2240	836	538	1440	716	426	245	215	918
23	419	828	1100	1730	804	708	1370	676	412	240	225	1870
24	638	860	1000	1450	780	1360	1190	652	398	240	1310	1520
25	1230	3190	950	1280	868	4450	1070	612	384	240	1140	1160
26	1260	5000	900	1150	820	2390	999	788	377	240	804	945
27	902	2580	850	1040	772	1630	918	1240	364	256	580	820
28	870	2160	850	954	740	1360	836	1200	352	245	482	732
29	2370	3220	1190	884	---	1170	764	963	346	240	419	684
30	4440	2160	1090	828	---	1040	716	828	340	235	370	636
31	2480	---	972	812	---	936	---	748	---	230	346	---
TOTAL	21154	74189	84062	56710	42361	33351	29295	27700	14978	8507	10556	31166
MEAN	682	2470	2712	1829	1513	1076	977	894	499	274	341	1039
MAX	4440	6960	9700	5560	3600	4450	1440	2470	692	334	1310	3520
MIN	233	828	850	812	740	538	676	482	340	230	210	517
AC-FT	41960	147000	166700	112500	84020	66150	58110	54940	29710	16870	20940	61820

CAL YR 1977 TOTAL 365504 MEAN 1001 MAX 9700 MIN 164 AC-FT 725000
WTR YR 1978 TOTAL 433949 MEAN 1189 MAX 9700 MIN 210 AC-FT 860700

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1955 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1955 to September 1962, October 1963 to current year.

INSTRUMENTATION.--Temperature recorder since May 1955.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument or silt over the probe.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 20.5°C July 13, 1961; minimum, (1955-62, 1964-77) 1.0°C Mar. 7, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 16.0°C June 28; minimum, 4.0°C Nov. 21, Jan. 2.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1977										
14...	1200	8450	38	7.2	8.0	20	110	11.6	K900	K20
DEC										
08...	1220	1900	53	7.4	5.4	5	5	12.0	50	<1
JAN , 1978										
12...	1120	1750	54	7.5	7.2	5	3	11.5	K55	K5
FEB										
07...	1320	3350	40	7.2	6.7	10	25	12.0	K600	K17
MAR										
09...	1140	1350	53	7.4	7.0	5	2	11.6	<1	<3
APR										
06...	1135	1300	54	7.5	7.3	5	1	11.8	56	2
MAY										
04...	0830	580	61	7.4	7.7	5	1	11.2	90	9
JUN										
15...	0825	652	63	7.3	9.5	0	0	10.6	K700	17
JUL										
20...	0915	256	69	7.2	10.9	5	0	10.2	K98	K7
AUG										
17...	0805	225	71	7.2	10.0	5	0	10.0	78	15
SEP										
12...	1250	1400	57	6.5	10.4	5	4	10.6	K100	9

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
NOV , 1977									
14...	.08	.05	.15	.20	.28	1.2	.17	.02	.06
DEC									
08...	.11	.06	.03	.09	.20	.90	.02	.00	.00
JAN , 1978									
12...	.13	.06	.00	.06	.19	.80	.02	.00	.00
FEB									
07...	.09	.07	.02	.09	.18	.80	.06	.01	.03
MAR									
09...	.07	.02	.04	.06	.13	.60	.02	.00	.00
APR									
06...	.05	.04	.06	.10	.15	.70	.01	.00	.00
MAY									
04...	.04	.14	.04	.18	.22	1.0	.01	.00	.00
JUN									
15...	.03	.01	.03	.04	.07	.30	.01	.01	.03
JUL									
20...	.01	.01	.04	.05	.06	.30	.00	.00	.00
AUG									
17...	.04	.02	.10	.12	.16	.70	.01	.01	.03
SEP									
12...	.08	.02	.06	.08	.16	.70	.02	.01	.03

K Results based upon colony counts outside the ideal range.

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	9.5	10.0	9.0	8.0	8.5	8.0	7.0	7.0	5.5	4.5	5.0
2	11.5	9.0	10.0	8.5	7.5	8.0	8.0	7.5	8.0	5.0	4.0	4.5
3	11.0	8.5	9.5	8.0	7.0	7.5	8.0	7.0	7.5	5.5	5.0	5.5
4	10.5	8.0	9.0	8.0	7.5	8.0	7.0	6.5	7.0	6.0	5.5	6.0
5	11.0	8.5	9.5	9.0	8.0	8.5	6.5	6.5	6.5	6.0	5.5	6.0
6	10.0	9.0	9.5	8.5	7.5	8.0	6.5	6.0	6.5	6.0	5.5	6.0
7	11.0	9.0	9.5	8.0	7.0	7.5	6.5	5.5	6.0	6.0	5.5	6.0
8	11.0	9.0	10.0	7.5	6.0	7.0	6.0	5.5	6.0	6.5	5.5	6.0
9	10.5	9.0	9.5	7.5	7.0	7.0	---	---	---	7.0	6.0	6.5
10	10.5	9.0	10.0	8.0	7.0	7.5	---	---	---	7.0	6.5	7.0
11	11.0	9.0	9.5	8.5	8.0	8.0	---	---	---	7.0	7.0	7.0
12	10.5	8.5	9.5	8.0	8.0	8.0	---	---	---	7.0	7.0	7.0
13	11.5	9.5	10.0	8.0	7.5	8.0	---	---	---	7.0	7.0	7.0
14	10.5	8.5	9.5	8.0	7.5	8.0	---	---	---	7.0	7.0	7.0
15	11.0	8.5	10.0	8.0	7.5	7.5	---	---	---	7.5	7.0	7.0
16	11.5	9.5	10.5	8.0	7.0	7.5	---	---	---	7.0	7.0	7.0
17	10.5	8.5	9.5	7.0	6.0	7.0	---	---	---	7.0	7.0	7.0
18	10.0	8.5	9.0	6.5	6.0	6.5	---	---	---	7.0	7.0	7.0
19	10.5	9.5	10.0	6.0	5.0	5.5	---	---	---	7.5	7.0	7.0
20	10.0	9.0	9.5	5.5	5.0	5.5	---	---	---	7.5	7.5	7.5
21	10.0	9.0	9.5	5.0	4.0	4.5	---	---	---	7.5	7.0	7.5
22	10.5	9.5	10.0	5.5	4.5	5.0	---	---	---	7.0	6.0	6.5
23	11.0	9.5	10.0	6.0	5.0	5.5	---	---	---	6.5	6.0	6.0
24	10.0	9.0	9.5	6.5	5.0	6.0	---	---	---	6.5	6.0	6.0
25	9.5	9.0	9.0	6.5	6.0	6.5	---	---	---	6.5	6.5	6.5
26	9.5	8.0	9.0	7.0	6.5	6.5	---	---	---	7.0	6.0	6.5
27	9.5	8.0	8.5	7.5	7.0	7.0	---	---	---	6.5	6.0	6.5
28	9.0	8.5	9.0	7.5	7.0	7.0	---	---	---	7.0	6.5	6.5
29	9.0	8.5	9.0	7.5	7.0	7.0	6.5	5.5	6.0	7.0	6.5	7.0
30	9.0	8.5	8.5	7.0	6.5	7.0	6.5	6.0	6.5	7.0	6.5	6.5
31	8.5	8.0	8.5	---	---	---	6.5	5.5	5.5	6.5	6.5	6.5
MONTH	11.5	8.0	9.5	9.0	4.0	7.0	8.0	5.5	6.5	7.5	4.0	6.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.5	6.5	7.0	6.5	6.5	9.5	9.0	9.0	---	---	---
2	6.5	6.0	6.5	7.0	6.0	6.5	9.0	8.5	8.5	---	---	---
3	6.5	6.0	6.5	---	---	---	9.0	8.5	8.5	---	---	---
4	7.0	6.5	6.5	---	---	---	9.0	8.5	8.5	---	---	---
5	7.0	7.0	7.0	---	---	---	9.0	8.0	8.5	---	---	---
6	7.0	7.0	7.0	---	---	---	8.0	7.5	7.5	---	---	---
7	7.0	6.5	7.0	---	---	---	8.5	7.5	8.0	---	---	---
8	6.5	6.5	6.5	7.5	7.0	7.0	8.5	8.0	8.5	---	---	---
9	6.5	6.5	6.5	7.5	7.0	7.5	9.0	8.5	8.5	---	---	---
10	6.5	6.0	6.0	8.0	7.5	7.5	9.5	9.0	9.0	---	---	---
11	6.0	6.0	6.0	8.0	7.5	8.0	9.5	8.5	9.0	---	---	---
12	6.0	5.5	6.0	8.0	7.5	8.0	9.5	8.5	9.0	---	---	---
13	6.0	6.0	6.0	8.0	7.5	8.0	9.0	8.5	8.5	---	---	---
14	6.5	6.0	6.5	8.0	7.0	7.5	9.0	8.5	9.0	---	---	---
15	6.5	6.0	6.0	8.0	7.5	7.5	9.0	8.5	8.5	---	---	---
16	6.0	6.0	6.0	8.5	7.5	8.0	9.0	8.5	8.5	---	---	---
17	6.5	6.5	6.5	9.0	8.0	8.5	9.0	8.5	8.5	---	---	---
18	7.0	6.5	7.0	9.0	8.0	8.5	8.5	8.0	8.0	---	---	---
19	7.5	7.0	7.5	9.0	8.0	8.5	8.5	8.0	8.0	---	---	---
20	7.5	7.5	7.5	9.5	8.0	8.5	8.0	8.0	8.0	---	---	---
21	8.0	7.5	7.5	9.5	8.5	9.0	8.0	7.5	8.0	---	---	---
22	8.0	7.5	8.0	9.5	8.5	9.0	8.0	7.5	7.5	---	---	---
23	8.0	8.0	8.0	9.5	9.0	9.5	---	---	---	---	---	---
24	8.0	7.5	7.5	9.0	8.0	8.5	---	---	---	---	---	---
25	7.5	7.0	7.5	8.0	7.5	8.0	---	---	---	---	---	---
26	7.5	7.0	7.0	8.0	8.0	8.0	---	---	---	9.5	8.5	9.0
27	7.5	7.0	7.5	8.5	8.0	8.5	---	---	---	10.5	8.5	9.5
28	7.5	6.5	7.0	8.5	8.5	8.5	---	---	---	11.5	8.0	9.5
29	---	---	---	9.0	8.5	8.5	---	---	---	11.0	8.0	9.5
30	---	---	---	9.5	9.0	9.0	---	---	---	13.0	8.0	10.0
31	---	---	---	9.5	9.0	9.0	---	---	---	13.5	8.5	11.0
MONTH	8.0	5.5	7.0	9.5	6.0	8.0	9.5	7.5	8.5	13.5	8.0	10.0

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	9.5	11.5	15.5	11.0	13.0	14.0	10.5	12.0	12.5	11.5	12.0
2	14.5	9.5	12.0	13.0	11.5	12.0	14.5	10.5	12.0	13.0	11.5	12.0
3	15.0	10.5	12.5	13.0	11.0	11.5	15.0	10.5	12.5	12.0	11.0	11.5
4	15.0	11.0	13.0	12.0	10.5	11.0	14.0	10.5	12.0	13.0	11.0	11.5
5	15.0	11.0	13.0	13.5	10.0	11.5	14.5	10.0	12.0	12.5	10.5	11.5
6	14.5	11.0	12.5	15.0	10.5	12.5	14.5	10.5	12.0	13.5	10.5	11.5
7	14.5	11.0	12.5	15.5	11.0	12.5	15.0	10.5	12.5	13.5	10.0	11.5
8	14.0	10.5	12.0	13.5	11.0	12.0	15.0	10.5	12.5	11.0	10.5	10.5
9	13.0	11.0	11.5	13.5	11.0	12.0	14.5	11.0	12.5	11.0	10.5	11.0
10	13.0	10.0	11.5	13.5	10.5	12.0	14.5	10.5	12.5	11.5	10.5	11.0
11	13.0	10.5	11.5	12.5	10.5	11.5	11.5	10.5	11.0	12.5	10.0	11.0
12	12.0	10.0	11.0	15.0	10.0	12.0	12.5	10.5	11.5	11.5	10.0	10.5
13	12.0	9.5	10.5	15.5	10.5	12.5	13.5	10.0	11.5	11.5	10.0	10.5
14	12.5	9.5	10.5	14.5	11.0	12.5	12.0	10.0	11.0	12.5	10.5	11.0
15	12.5	9.5	11.0	13.5	11.0	12.0	14.0	11.0	12.0	12.5	10.0	11.0
16	12.0	10.0	11.0	12.5	11.0	11.5	13.5	10.5	11.5	11.5	9.5	10.5
17	14.5	9.0	11.5	12.5	10.5	11.5	13.5	10.0	11.5	11.0	9.0	10.0
18	14.5	10.5	12.0	14.0	10.5	11.5	12.0	10.5	11.0	11.5	9.0	10.0
19	14.5	10.0	12.0	15.0	10.5	12.5	12.0	10.0	11.0	12.0	9.5	10.5
20	15.0	10.5	12.5	15.0	10.5	12.5	12.0	10.0	11.0	10.5	10.0	10.0
21	15.0	11.0	12.5	15.5	10.5	13.0	12.5	10.0	11.0	11.0	9.5	10.0
22	12.0	10.5	11.0	15.5	10.5	13.0	12.5	10.0	11.0	10.5	9.5	10.0
23	14.0	10.5	12.0	15.5	11.0	13.0	11.0	10.0	10.5	10.5	10.0	10.0
24	13.5	10.5	12.0	15.0	11.0	12.5	12.5	10.5	11.5	11.5	10.0	10.5
25	12.0	10.5	11.0	15.0	10.5	12.5	13.0	10.5	11.5	11.5	10.5	11.0
26	14.5	10.5	12.0	12.0	11.0	11.5	14.0	10.5	12.0	12.5	10.0	11.0
27	15.5	10.5	12.5	13.0	11.0	12.0	13.0	10.5	11.5	12.0	10.0	11.0
28	16.0	11.0	13.0	14.0	10.0	12.0	14.5	11.0	12.5	11.0	10.0	10.5
29	13.0	11.5	12.5	15.0	10.5	12.5	14.5	11.0	12.5	12.5	10.5	11.0
30	14.5	11.0	12.5	15.0	10.5	12.5	15.0	11.5	13.0	12.0	10.5	11.0
31	---	---	---	14.5	10.5	12.0	13.0	11.5	12.0	---	---	---
MONTH	16.0	9.0	12.0	15.5	10.0	12.0	15.0	10.0	12.0	13.5	9.0	11.0
YEAR	16.0	4.0	9.5									

12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.--Lat 47°38'27", long 122°47'02", in NW¼SE¼ sec.22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi (1.8 km) upstream from county road bridge across Big Beef Harbor and 1.9 mi (3.1 km) east of Seabeck.

DRAINAGE AREA.--13.8 mi² (35.7 km²).

PERIOD OF RECORD.--August 1969 to current year.

REVISED RECORDS.--WRD WA-76-1: 1975 (M).

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map. Prior to July 7, 1978, at site 110 ft (36 m) downstream at datum 2.03 ft (0.619 m) lower.

REMARKS.--Records good except those for period of shifting control Dec. 14 to Mar. 23, and period of no gage-height record June 16 to July 6, which are fair. Water is diverted by the University of Washington Research station to fill fish tanks and is returned to the creek above the gage. Flow may be partially regulated by Lake Symington 4.6 mi (7.4 km) upstream.

AVERAGE DISCHARGE.--9 years, 40.7 ft³/s (1.153 m³/s), 40.05 in/yr (1,017 mm/yr), 29,490 acre-ft/yr (36.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 757 ft³/s (21.4 m³/s) Dec. 7, 1970; m); maximum gage height, 5.74 ft (1.750 m) Jan. 16, 1974, site and datum then in use; minimum discharge, 2.3 ft³/s (0.065 m³/s) Aug. 30, 31, 1970, Sept. 2, 1974, but may have been less during period of no gage-height record Sept. 3-30,1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 275 ft³/s (7.79 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 11	1500	*500	14.2	*5.05	1.539

Minimum discharge, 3.2 ft³/s (0.091 m³/s) Aug. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	66	62	62	83	40	37	25	16	7.0	4.1	8.4
2	7.0	112	60	56	147	37	35	23	15	7.4	4.1	8.4
3	6.5	85	51	81	168	36	33	23	14	7.8	4.4	8.4
4	5.7	56	42	115	140	35	31	22	14	7.4	3.8	11
5	5.1	44	37	136	123	34	42	20	13	7.2	3.8	12
6	5.4	33	56	138	119	33	61	19	13	7.0	4.4	12
7	5.4	30	58	138	129	85	46	18	13	6.9	4.1	11
8	5.4	24	49	229	151	96	37	17	13	6.9	3.5	15
9	5.7	27	44	209	144	77	33	16	14	6.4	3.5	42
10	6.0	60	90	165	123	67	30	16	16	6.4	4.1	51
11	5.4	60	428	138	109	53	27	16	14	6.0	3.8	36
12	5.1	56	381	117	102	44	25	15	14	6.0	4.1	21
13	5.1	80	365	107	95	42	25	32	14	6.0	3.8	20
14	4.8	174	333	109	91	37	23	60	15	5.6	3.8	18
15	4.6	144	232	109	102	33	23	71	15	5.6	4.4	15
16	4.5	101	178	104	96	30	37	61	14	7.4	4.4	13
17	4.2	71	151	98	85	29	40	41	14	6.9	4.1	12
18	3.9	58	140	96	69	27	42	33	13	6.9	4.1	11
19	4.2	47	129	91	59	26	60	29	12	6.4	3.8	13
20	4.2	39	117	81	53	24	55	26	11	6.4	3.8	18
21	4.5	31	109	102	48	23	43	23	11	6.0	3.8	16
22	4.5	23	102	109	45	23	57	21	12	5.6	4.1	21
23	7.0	23	100	100	43	25	61	22	10	6.0	4.8	36
24	6.5	39	86	96	42	44	45	21	9.0	5.6	8.9	42
25	8.5	76	65	89	48	115	37	20	9.0	5.6	8.4	37
26	9.5	129	72	78	50	111	33	19	9.0	6.0	11	31
27	9.5	103	71	64	46	91	32	20	8.5	5.6	10	26
28	10	83	68	56	43	80	33	21	7.5	4.8	8.9	23
29	20	80	91	53	---	67	30	20	7.8	4.4	6.9	21
30	39	69	89	48	---	50	28	19	7.8	4.1	5.6	20
31	25	---	72	47	---	42	---	16	---	4.1	5.6	---
TOTAL	249.9	2025	3928	3221	2553	1556	1141	805	368.6	191.4	157.9	629.2
MEAN	8.06	67.5	127	104	91.2	50.2	38.0	26.0	12.3	6.17	5.09	21.0
MAX	39	174	428	229	168	115	61	71	16	7.8	11	51
MIN	3.9	23	37	47	42	23	23	15	7.5	4.1	3.5	8.4
CFSM	.58	4.89	9.20	7.54	6.61	3.64	2.75	1.88	.89	.45	.37	1.52
IN.	.67	5.46	10.59	8.68	6.88	4.19	3.08	2.17	.99	.52	.43	1.70
AC-FT	496	4020	7790	6390	5060	3090	2260	1600	731	380	313	1250

CAL YR 1977 TOTAL 10983.2 MEAN 30.1 MAX 488 MIN 3.0 CFSM 2.18 IN 29.60 AC-FT 21790
WTR YR 1978 TOTAL 16826.0 MEAN 46.1 MAX 428 MIN 3.5 CFSM 3.34 IN 45.35 AC-FT 33370

12073500 HUGE CREEK NEAR WAUNA, WA

LOCATION.--Lat 47°23'22", long 122°41'52", at north line sec.20, T.22 N., R.1 E., Pierce County, Hydrologic Unit 17110019, on right bank 25 ft (7.6 km) upstream from bridge, 0.1 mi (0.2 km) upstream from mouth, and 2.5 mi (4.02 km) west of Wauna.

DRAINAGE AREA.--6.47 mi^2 (16.76 km^2).

PERIOD OF RECORD.--July 1947 to September 1969, October 1977 to September 1978.

REVISED RECORDS.--WSP 1636: 1953-54, 1956, 1957(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m) from topographic map. Prior to Sept. 27, 1978, at site 50 ft (15 m) downstream and prior to June 26, 1951, at datum 0.86 ft (0.262 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--23 years (water years 1948-69, 1978) 11.6 ft^3/s (0.329 m^3/s), 24.35 in/yr (618 mm/yr), 8,400 acre-ft/yr (10.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 391 ft^3/s (11.1 m^3/s) Feb. 9, 1951, gage height, 4.50 ft (1.372 m) present datum; minimum, 3.2 ft^3/s (0.091 m^3/s) Sept. 1, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 70 ft^3/s (1.98 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 11	2300	*103	2.92	*1.83	0.558	Dec. 15	1500	94	2.66	1.76	0.536

Minimum discharge, 3.4 ft^3/s (0.091 m^3/s) Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	20	19	11	19	10	8.1	8.1	5.3	4.7	4.2	7.3
2	4.5	13	21	11	36	9.7	8.5	7.7	5.3	5.0	4.2	7.3
3	4.5	11	17	16	35	9.3	8.1	7.7	5.0	5.3	4.0	5.9
4	4.5	9.7	14	22	25	9.3	8.9	7.7	5.0	5.0	4.0	6.2
5	4.5	8.9	12	24	22	9.3	11	7.7	5.0	5.0	4.0	5.9
6	4.7	8.5	22	21	21	9.3	9.3	7.3	5.0	5.0	4.0	5.6
7	4.7	8.9	20	25	22	14	8.1	7.3	5.0	5.0	4.0	5.3
8	4.7	8.5	16	47	25	11	8.1	7.3	5.0	5.3	3.7	5.9
9	4.5	11	13	47	22	9.7	7.7	7.3	5.9	5.3	3.7	11
10	4.5	15	29	39	18	8.9	7.7	7.3	5.3	5.0	3.7	8.5
11	4.5	12	80	30	16	8.9	7.3	7.7	5.3	5.3	4.2	5.9
12	4.5	12	83	24	14	8.9	7.3	7.3	5.3	5.0	4.2	5.0
13	4.7	15	85	22	13	9.3	7.3	9.3	5.6	5.0	4.2	4.7
14	4.7	26	75	26	13	8.1	7.7	14	5.6	5.0	4.0	4.2
15	4.7	19	80	23	15	8.1	7.7	12	5.9	5.0	4.2	4.4
16	4.7	15	65	20	13	7.7	14	19	5.3	5.3	4.0	4.2
17	5.0	12	43	18	12	7.3	9.7	15	5.3	5.0	4.0	4.5
18	5.0	11	33	16	11	7.3	11	13	5.0	5.0	4.0	4.2
19	5.3	10	26	15	11	6.9	11	12	5.0	4.5	4.5	4.2
20	5.3	9.7	22	15	11	6.9	9.7	8.9	4.5	4.2	4.5	4.7
21	5.9	9.3	20	23	10	6.9	9.7	7.7	4.5	4.2	4.2	5.0
22	5.6	9.3	17	20	10	6.9	13	6.9	5.0	4.2	4.2	9.3
23	6.5	11	16	16	10	8.1	11	6.5	5.0	4.2	4.5	15
24	8.5	13	14	15	11	9.3	10	6.2	4.7	4.5	6.5	8.9
25	11	30	13	13	13	12	9.3	5.9	4.7	4.2	6.9	7.3
26	9.3	37	12	13	12	10	8.9	6.9	4.7	5.6	5.3	7.7
27	7.7	26	12	12	11	8.9	9.7	7.7	4.7	5.3	5.0	8.1
28	8.5	20	11	12	11	9.3	8.9	6.9	4.5	4.5	4.7	8.1
29	11	24	13	11	---	8.9	8.5	6.2	4.7	4.2	4.7	8.1
30	11	18	12	11	---	8.5	8.1	5.9	4.7	4.0	4.7	8.1
31	8.5	---	11	11	---	8.1	---	5.9	---	4.0	4.7	---
TOTAL	187.7	453.8	926	629	462	276.8	275.3	266.3	151.8	148.8	136.7	200.5
MEAN	6.05	15.1	29.9	20.3	16.5	8.93	9.18	8.59	5.06	4.80	4.41	6.68
MAX	11	37	85	47	36	14	14	19	5.9	5.6	6.9	15
MIN	4.5	8.5	11	11	10	6.9	7.3	5.9	4.5	4.0	3.7	4.2
CFSM	.94	2.33	4.62	3.14	2.55	1.38	1.42	1.33	.78	.74	.68	1.03
IN.	1.08	2.61	5.32	3.62	2.66	1.59	1.58	1.53	.87	.86	.79	1.15
AC-FT	372	900	1840	1250	916	549	546	528	301	295	271	398

WTR YR 1978 TOTAL 4114.7 MEAN 11.3 MAX 85 MIN 3.7 CFSM 1.75 IN 23.65 AC-FT 8160

12079004 DESCHUTES RIVER AT HIGHWAY 507 NEAR RAINIER, WA

LOCATION.--Lat 46°52'23", long 122°43'44", in SE¼NW¼ sec.18, T.16 N., R.1 E., Thurston County, Hydrologic Unit 17110016, at bridge on State Highway 507, 2.2 mi (3.5 km) southwest of Rainier, 4.3 mi (6.9 km) downstream from former gaging station (12079000), at mile 21.6 (34.8 km).

DRAINAGE AREA.--101 mi² (262 km²).

PERIOD OF RECORD.--Water years 1959-62, 1968-72, 1975, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1968 to September 1970.

REMARKS.--Water-discharge from rating; discharge value is good. Water temperatures for the period August 1968 to September 1970 collected at gage 4.3 mi (6.9 km) upstream. Prior to October 1974 station published as 12079000.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
05...	1225	69	115	7.0	10.3	--	2
NOV							
15...	1125	804	56	7.1	8.4	85	15
DEC							
06...	1140	1040	67	7.1	8.1	65	18
JAN , 1978							
04...	1240	692	61	7.4	6.3	95	24
FEB							
02...	1100	596	75	7.2	5.4	85	23
MAR							
14...	1100	210	97	7.1	7.0	30	5
APR							
18...	1220	325	76	7.5	9.2	75	15
MAY							
09...	1305	115	105	7.6	13.6	--	2
JUN							
13...	1520	115	109	7.7	14.4	--	2
JUL							
25...	1205	41	128	7.5	17.5	15	2
AUG							
15...	1230	35	128	7.6	16.1	15	1
SEP							
06...	1130	74	104	7.5	14.5	15	2

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
05...	11.5	.11	.03	.02	.00	.00
NOV						
15...	11.4	.24	.07	.05	.01	.03
DEC						
06...	11.5	.38	.09	.08	.01	.03
JAN , 1978						
04...	12.1	.23	.13	.07	.02	.06
FEB						
02...	11.9	.24	.13	.08	.02	.06
MAR						
14...	12.6	.29	.07	.03	.01	.03
APR						
18...	11.4	.20	.10	.04	.01	.03
MAY						
09...	10.8	.22	.08	.02	.01	.03
JUN						
13...	10.7	.17	.06	.02	.01	.03
JUL						
25...	9.4	.27	.06	.03	.02	.06
AUG						
15...	10.0	.23	.06	.02	.02	.06
SEP						
06...	10.2	.14	.05	.02	.01	.03

12080010 DESCHUTES RIVER AT E STREET BRIDGE AT TUMWATER, WA

LOCATION.--Lat 47°00'43", long 122°54'07", in NW¼ sec.60, T.18 N., R.2 W., Thurston County, Hydrologic Unit 17110016, at E Street bridge at Tumwater.

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
05...	1330	118	119	7.6	11.4	--	2
NOV							
15...	1220	1230	64	7.0	8.5	15	22
DEC							
06...	1230	1300	80	7.2	8.3	60	20
JAN , 1978							
04...	1340	952	80	7.4	7.2	55	24
FEB							
02...	0905	574	93	7.1	7.6	45	10
MAR							
14...	1300	372	111	6.8	9.0	25	4
APR							
18...	1330	450	89	7.5	10.9	70	11
MAY							
09...	1345	242	111	7.6	14.2	--	2
JUN							
14...	0845	180	115	7.4	12.6	--	2
JUL							
25...	1315	102	124	7.9	19.6	15	2
AUG							
15...	1340	98	121	8.3	16.4	15	2
SEP							
06...	1315	162	128	7.6	15.2	15	3

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
05...	13.1	.26	.03	.02	.00	.00
NOV						
15...	11.3	.31	.10	.08	.01	.03
DEC						
06...	11.4	.58	.09	.07	.01	.03
JAN , 1978						
04...	11.8	.36	.10	.09	.02	.06
FEB						
02...	11.3	.50	.06	.06	.02	.06
MAR						
14...	12.4	.40	.12	.03	.01	.03
APR						
18...	11.1	.32	.09	.04	.01	.03
MAY						
09...	10.7	.37	.07	.02	.01	.03
JUN						
14...	10.0	.38	.12	.02	.01	.03
JUL						
25...	10.6	.45	.05	.03	.02	.06
AUG						
15...	12.4	.34	.10	.02	.01	.03
SEP						
06...	11.2	.30	.07	.03	.01	.03

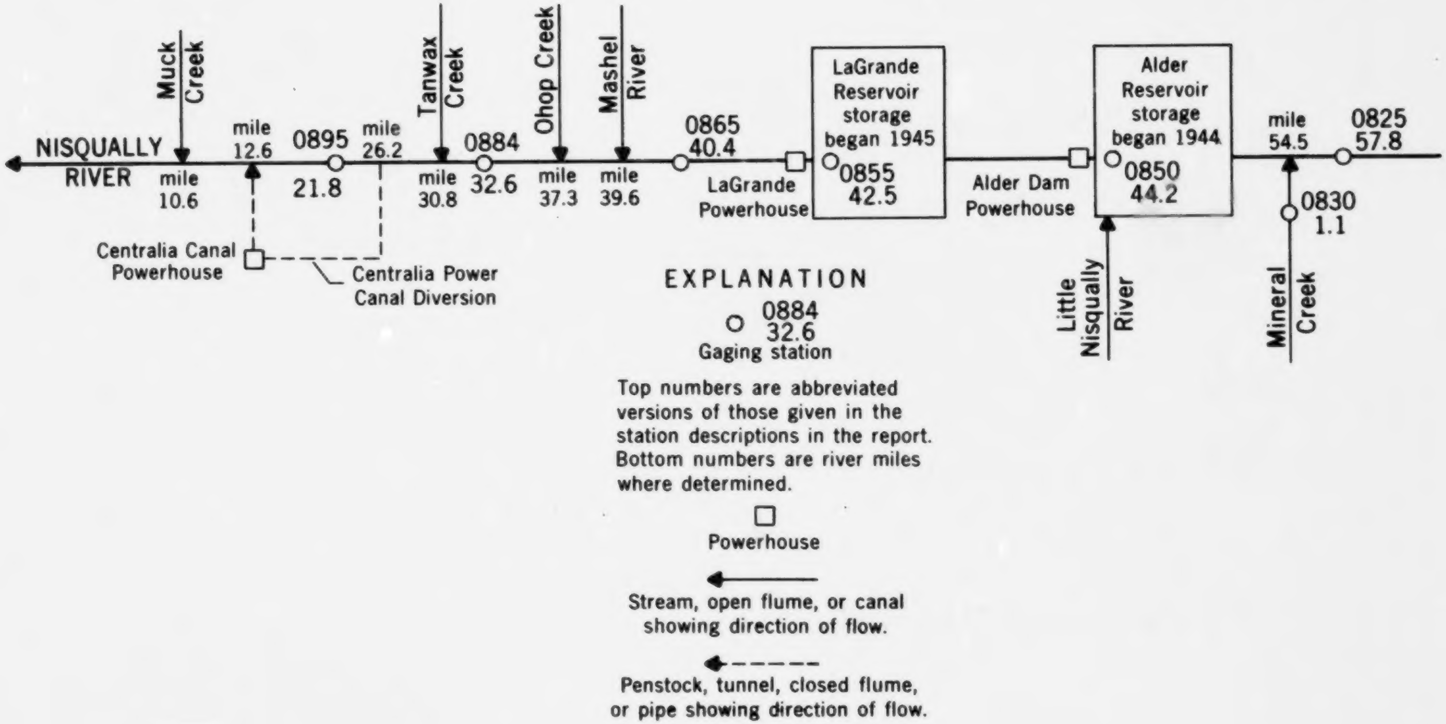
NISQUALLY RIVER
Muck Creek
mile 10.6
mile 12.6
Centralia Canal Powerhouse
0895
21.8
mile 26.2
Centralia Power Canal Diversion
Tanwax Creek
mile 30.8
0884
32.6
Ohop Creek
mile 37.3
Mashel River
mile 39.6
0865
40.4
LaGrande Powerhouse
LaGrande Reservoir storage began 1945
0855
42.5
Alder Dam Powerhouse
Alder Reservoir storage began 1944
0850
44.2
Little Nisqually River
mile 54.5
Mineral Creek
0830
1.1
0825
57.8
EXPLANATION
0884
32.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 9. Gaging stations in Nisqually River basin.

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW¼SW¼ sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft (30 m) downstream from old railroad bridge, 1.2 mi (1.9 km) west of National, 3.3 mi (5.3 km) upstream from Mineral Creek, and at mile 57.8 (93.0 km).

DRAINAGE AREA.--133 mi² (344 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WRD Wash. 1974: 1968(M), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,450 ft (442 m), from river-profile map.

REMARKS.--Water-discharge records good except those above 5,000 ft³/s (142 m³/s), which are fair. Small diversions for domestic use. Slight regulation at low flow by powerplant of Mount Rainier National Park on Paradise River.

AVERAGE DISCHARGE.--36 years, 785 ft³/s (22.23 m³/s), 80.15 in/yr (2,036 mm/yr), 568,700 acre-ft/yr (701 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s (484 m³/s) Dec. 2, 1977, gage height, 11.96 ft (3.645 m), from rating curve extended above 8,000 ft³/s (227 m³/s) on basis of slope-area measurement at gage height 11.25 ft (3.429 m); minimum discharge, 108 ft³/s (3.06 m³/s) Dec. 1, 3, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0015	3,060	86.7	5.66	1.725	Dec. 2	1130	*17,100	484	*11.96	3.645
Nov. 25	2200	5,900	167	7.45	2.271	Dec. 13	1730	6,880	195	8.87	2.704
Nov. 29	0645	3,320	94.0	5.86	1.786						

Minimum discharge, 285 ft³/s (8.07 m³/s) Oct. 22, gage height, 2.00 ft (0.610 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	486	1120	4250	455	485	430	628	616	694	861	616	700
2	447	2140	12500	445	598	397	580	586	819	777	652	646
3	419	1200	3700	520	670	388	520	574	942	707	763	634
4	395	890	2370	694	652	388	500	544	1050	700	826	574
5	372	716	1630	854	714	370	490	495	1150	694	770	574
6	369	602	2020	861	861	357	450	465	1130	742	694	550
7	399	650	1990	805	840	470	420	455	942	812	694	470
8	354	600	1500	1160	833	544	402	475	903	833	728	435
9	345	800	1230	1260	756	490	388	538	990	756	742	586
10	330	2000	1540	1120	664	460	397	604	840	640	664	707
11	321	1400	3420	958	604	460	430	622	728	574	592	574
12	324	1100	3160	868	556	440	406	568	721	580	580	520
13	345	1000	4480	812	520	440	402	749	784	640	490	495
14	339	1500	5420	903	490	415	393	1460	700	700	440	450
15	351	1600	3690	903	475	388	384	1380	646	742	840	460
16	383	1270	2340	826	445	380	445	1140	598	926	728	425
17	357	1050	1720	784	425	375	425	958	592	826	532	425
18	339	890	1380	700	420	384	490	840	700	714	475	379
19	324	770	1130	652	435	388	586	854	770	694	515	361
20	303	656	966	604	430	402	616	982	777	694	440	348
21	300	584	854	658	445	425	604	1030	777	735	430	339
22	288	545	763	652	460	470	616	875	742	819	425	430
23	351	545	707	580	475	556	604	735	700	861	393	784
24	375	555	670	544	485	616	592	652	640	812	495	694
25	482	2580	628	538	505	770	652	598	646	763	480	664
26	435	4100	586	538	510	805	770	568	616	868	425	634
27	379	2400	550	495	470	735	826	634	700	840	388	634
28	360	2080	526	500	455	735	812	721	847	676	402	530
29	431	2670	556	480	---	735	735	646	896	628	450	470
30	630	1910	538	455	---	742	676	592	868	634	532	480
31	610	---	490	460	---	694	---	604	---	622	610	---
TOTAL	11943	39923	67304	22084	15678	15649	16239	22560	23908	22870	17811	15972
MEAN	385	1331	2171	712	560	505	541	728	797	738	575	532
MAX	630	4100	12500	1260	861	805	826	1460	1150	926	840	784
MIN	288	545	490	445	420	357	384	455	592	574	388	339
CFSM	2.90	10.0	16.3	5.35	4.21	3.80	4.07	5.47	5.99	5.55	4.32	4.00
IN.	3.34	11.17	18.82	6.18	4.39	4.38	4.54	6.31	6.69	6.40	4.98	4.47
AC-FT	23690	79190	133500	43800	31100	31040	32210	44750	47420	45360	35330	31680

CAL YR 1977 TOTAL 284152 MEAN 778 MAX 12500 MIN 210 CFSM 5.85 IN 79.48 AC-FT 563600
WTR YR 1978 TOTAL 291941 MEAN 800 MAX 12500 MIN 288 CFSM 6.02 IN 81.66 AC-FT 579100

12082500 NISQUALLY RIVER NEAR NATIONAL, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1951 to current year.

INSTRUMENTATION.--Temperature recorder since October 1951.

REMARKS.--No record available Oct. 3 to Feb. 1, recorder stolen. Other interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.5°C July 13, 1961, July 3, 1970; minimum, (1961-63, 1965-78) 0.0°C on many days during winter months of most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.5°C July 13, 20-23, 25, Aug. 7; minimum recorded, 1.0°C Mar. 2.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	MAX	MIN	MEAN
OCT. 1	10.0	7.0	8.5
2	9.5	6.0	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	5.0	1.5	3.0	6.5	5.5	6.0	7.5	6.0	7.0
2	4.0	3.5	4.0	4.5	1.0	2.5	7.0	4.5	5.5	9.5	6.0	7.5
3	5.5	4.0	4.5	3.0	1.5	2.0	9.0	4.5	6.5	8.0	5.5	7.0
4	6.0	4.5	5.0	4.5	2.0	3.5	7.5	5.0	6.0	7.0	5.0	6.0
5	6.0	5.0	5.5	5.0	2.5	3.5	7.5	4.5	5.5	9.5	4.5	6.5
6	5.5	4.5	5.0	5.5	3.0	4.5	7.0	3.0	5.0	12.5	4.0	8.0
7	5.0	4.5	5.0	6.0	5.0	5.5	9.0	4.0	6.5	13.0	5.0	8.5
8	5.0	4.0	4.5	7.0	4.0	5.5	9.5	4.5	6.5	13.5	6.0	9.5
9	4.5	4.0	4.5	6.5	4.5	5.5	11.5	4.0	7.5	10.0	7.5	8.5
10	3.5	2.5	3.0	7.5	3.5	5.0	12.0	5.5	8.5	8.0	6.5	7.5
11	3.5	2.5	3.0	5.0	4.0	4.5	8.0	5.5	6.5	8.5	6.0	7.0
12	3.0	1.5	2.5	5.5	3.5	4.5	10.5	3.5	7.0	9.0	5.5	7.0
13	5.0	2.5	3.5	4.5	3.5	4.0	8.0	4.0	6.0	8.0	6.5	7.0
14	5.0	3.5	4.0	5.5	3.0	4.0	7.5	5.0	6.0	7.0	6.0	6.5
15	4.0	3.0	3.5	---	---	---	9.0	5.0	7.0	8.5	5.5	6.5
16	4.5	2.5	3.5	---	---	---	6.0	3.0	4.5	7.0	6.0	6.5
17	5.0	3.5	4.0	---	---	---	8.0	4.0	5.5	8.0	6.0	7.0
18	5.0	4.0	4.5	9.5	3.5	6.5	9.5	5.0	7.0	12.5	5.0	8.5
19	7.0	4.0	5.5	9.0	4.0	6.5	9.0	5.0	6.5	14.0	7.0	10.0
20	7.0	3.5	5.0	10.0	4.5	7.0	7.0	5.0	6.0	13.0	7.0	10.0
21	7.5	4.0	5.5	10.0	4.5	7.0	6.0	4.5	5.0	10.0	7.0	8.5
22	7.0	3.5	5.5	10.0	5.0	7.5	6.0	4.0	5.0	8.5	5.5	7.0
23	6.5	5.0	5.5	7.0	6.0	6.5	9.0	4.0	6.5	10.5	5.5	7.5
24	5.5	4.5	5.0	7.0	5.0	6.0	10.5	5.5	7.5	10.5	6.0	8.0
25	6.0	4.5	5.0	6.5	5.5	6.0	9.0	6.5	7.5	9.5	6.5	8.0
26	5.0	4.5	5.0	8.0	5.0	6.5	8.0	7.0	7.5	8.5	7.0	7.5
27	5.0	3.5	4.0	8.0	6.0	7.0	7.5	6.0	6.5	9.5	7.0	8.0
28	4.0	3.0	3.5	8.5	6.0	7.0	7.5	5.0	6.5	10.5	6.5	8.5
29	---	---	---	9.0	6.0	7.5	10.5	5.0	7.5	10.0	6.0	8.0
30	---	---	---	7.5	6.0	6.5	8.0	5.5	7.0	12.5	5.5	9.0
31	---	---	---	9.0	4.0	6.5	---	---	---	13.5	6.5	10.0
MONTH	7.5	1.5	4.5	10.0	1.0	5.5	12.0	3.0	6.5	14.0	4.0	8.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	7.5	11.0	12.0	8.5	10.0	---	---	---	10.5	9.0	9.5
2	15.5	7.5	11.0	11.0	8.0	9.5	---	---	---	12.0	8.5	10.0
3	15.5	8.0	11.0	9.5	8.5	9.0	---	---	---	10.0	8.5	9.0
4	16.0	8.0	11.5	9.0	7.5	8.5	---	---	---	10.5	7.5	9.0
5	15.5	8.0	11.5	10.5	7.5	8.5	16.0	8.0	11.5	9.5	8.0	8.5
6	12.5	7.5	10.0	16.0	7.5	11.0	16.5	7.5	11.5	11.0	8.0	9.0
7	14.0	7.5	10.0	16.5	8.0	11.5	17.5	8.0	12.0	11.0	7.5	9.0
8	15.0	7.0	10.5	13.0	9.0	10.5	17.0	8.5	12.5	10.5	7.5	9.0
9	10.0	7.5	8.5	13.0	8.0	10.0	16.5	8.5	12.0	10.5	9.0	9.5
10	10.5	7.0	8.5	10.5	8.0	9.0	14.0	7.0	10.5	10.5	8.0	9.0
11	12.5	7.5	9.5	11.5	8.0	9.5	11.5	9.0	10.0	10.5	8.0	9.0
12	11.0	8.0	9.5	17.0	7.5	11.5	12.5	8.5	10.0	13.5	8.0	10.5
13	10.5	7.5	9.0	17.5	8.5	12.5	12.5	8.0	10.0	10.5	8.0	9.0
14	10.0	6.5	8.5	15.5	8.0	11.5	10.5	7.5	9.0	11.5	8.5	10.0
15	10.5	7.0	8.5	13.5	9.0	11.5	11.0	8.5	10.0	11.5	8.5	9.5
16	10.5	8.0	9.0	10.5	9.0	9.5	10.0	7.0	9.0	11.5	6.0	8.5
17	16.0	7.0	11.0	11.0	7.5	9.0	12.5	8.0	9.5	9.5	6.5	8.0
18	14.5	8.0	11.5	15.5	8.0	10.5	14.5	8.5	11.0	10.5	5.0	7.5
19	16.0	8.5	12.0	17.0	8.0	11.5	11.0	8.5	9.5	12.0	5.5	8.5
20	16.5	8.0	12.0	17.5	7.5	12.0	11.0	8.5	10.0	9.5	7.0	8.5
21	15.5	8.0	11.5	17.5	8.5	12.5	13.0	8.5	10.5	10.5	7.5	9.0
22	14.5	8.5	11.5	17.5	8.5	12.5	10.5	9.0	10.0	9.0	8.0	8.5
23	11.5	8.5	10.0	17.5	8.5	12.5	12.0	7.5	9.5	10.5	8.0	9.0
24	10.0	8.5	9.0	16.5	8.0	12.0	12.0	9.0	10.0	12.5	8.0	10.0
25	10.0	8.0	9.0	17.5	8.5	12.5	12.0	8.0	10.0	13.0	8.0	10.5
26	15.5	8.0	11.0	12.5	9.0	10.5	15.0	7.0	11.0	13.5	8.5	11.0
27	17.0	8.0	12.5	15.0	8.5	11.5	15.0	8.0	11.5	11.5	8.5	10.0
28	17.0	9.0	12.5	16.5	8.5	12.0	17.0	8.5	12.5	9.5	7.5	8.5
29	10.5	9.0	10.0	17.0	8.0	12.0	17.0	9.0	13.0	12.5	7.5	9.5
30	14.5	8.0	10.5	17.0	8.0	12.0	14.5	9.5	12.0	11.0	8.5	9.5
31	---	---	---	---	---	---	11.0	9.5	10.0	---	---	---
MONTH	17.0	6.5	10.5	17.5	7.5	11.0	17.5	7.0	10.5	13.5	5.0	9.0

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'15", long 122°08'33", in NE¼SW¼ sec. 35, T.15 N., R.5 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.5 mi (0.8 km) downstream from CMSTP&P Railroad bridge, 2.3 mi (3.7 km) northeast of Mineral, and at mile 1.1 (1.8 km).

DRAINAGE AREA.--75.2 mi² (194.8 km²).

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WRD Wash. 1974, 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,340 ft (408 m), from topographic map.

REMARKS.--Records good except those for period Nov. 25 to Dec. 17, which are fair. No regulation or diversion above station.

AVERAGE DISCHARG-36 years, 379 ft³/s (10.73 m³/s) 68.44 in/yr (1,738 mm/yr) 274,600 acre-ft/yr (339 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,740 ft³/s (276 m³/s) Jan. 20, 1972, gage height, 10.87 ft (3.313 m); minimum, 16 ft³/s (0.45 m³/s) Aug. 30, 31, 1970; minimum gage height, 1.40 ft (0.427 m) Sept. 22, 23, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,700 ft³/s (76.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2115	3,340	94.6	8.44	2.573	Dec. 2	1500	4,780	135	9.29	2.832
Nov. 25	1745	*4,840	137	9.32	2.841	Dec. 13	1630	4,680	133	*10.09	3.075

Minimum discharge, 29 ft³/s (0.82 m³/s) Aug. 9, 10, gage height, 3.29 ft (1.003 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	1520	1000	235	308	210	242	370	170	74	40	89
2	140	1830	3460	225	609	192	237	326	160	76	37	87
3	130	1010	2710	398	699	190	230	293	150	76	37	74
4	123	690	1650	785	614	190	225	272	142	77	35	74
5	123	540	1160	895	600	177	254	248	134	74	35	89
6	120	444	1930	920	673	166	233	222	124	70	34	89
7	134	484	1890	795	659	302	217	205	118	66	32	77
8	119	398	1260	1060	726	423	205	190	112	63	32	73
9	112	394	946	1040	659	326	192	182	144	62	30	87
10	103	618	1360	895	552	287	182	185	156	62	31	126
11	94	560	2800	745	476	269	175	284	148	65	34	110
12	91	536	2220	668	415	251	166	275	150	61	47	96
13	88	731	3180	623	363	248	162	488	154	57	51	90
14	85	1620	3310	659	326	227	168	1140	166	54	41	86
15	82	1460	2440	609	305	212	170	1020	170	56	61	79
16	80	1170	1800	544	269	202	240	750	162	83	56	76
17	78	860	1260	500	248	192	260	582	134	73	52	96
18	76	681	935	436	242	185	314	476	122	62	43	84
19	74	548	745	405	235	175	398	405	114	57	45	76
20	72	448	609	373	222	170	440	352	107	53	45	72
21	70	380	524	480	217	166	440	317	101	49	43	69
22	68	338	456	500	212	164	569	290	98	47	48	150
23	102	377	405	429	207	190	587	257	93	46	46	323
24	139	492	377	387	207	251	532	233	93	45	69	272
25	260	2380	359	359	240	587	528	217	93	43	73	202
26	293	3100	329	345	257	524	560	212	87	43	63	160
27	206	1760	302	311	237	412	591	230	93	45	53	136
28	178	1520	281	305	225	370	548	237	79	42	48	124
29	284	1450	305	290	---	323	484	227	79	41	45	110
30	640	1100	290	266	---	299	423	202	77	40	42	102
31	605	---	263	266	---	269	---	185	---	39	49	---
TOTAL	4924	29439	40556	16748	11002	8149	9972	10872	3720	1801	1397	3378
MEAN	159	981	1308	540	393	263	332	351	124	58.1	45.1	113
MAX	640	3100	3460	1060	726	587	591	1140	170	83	73	323
MIN	68	338	263	225	207	164	162	182	77	39	30	69
CFSM	2.11	13.0	17.4	7.18	5.23	3.50	4.42	4.67	1.65	.77	.60	1.50
IN.	2.44	14.56	20.06	8.28	5.44	4.03	4.93	5.38	1.84	.89	.69	1.67
AC-FT	9770	58390	80440	33220	21820	16160	19780	21560	7380	3570	2770	6700

CAL YR 1977 TOTAL 132040 MEAN 362 MAX 3460 MIN 24 CFSM 4.81 IN 65.32 AC-FT 261900
WTR YR 1978 TOTAL 141958 MEAN 389 MAX 3460 MIN 30 CFSM 5.17 IN 70.22 AC-FT 281600

12083400 NISQUALLY RIVER AT ELBE, WA

LOCATION.--Lat 46°45'47", long 122°11'27", in NW¼NW¼ sec.28, T.15 N., R.5 E., Pierce County, Hydrologic Unit 17110015, at State Highway 7 crossing, at Elbe and at mile 51.7 (83.2 km^2).

DRAINAGE AREA.--22.6 mi^2 (58.5 km^2).

PERIOD OF RECORD.--Water years 1973 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1977										
06...	1110	475	77	7.1	7.3	15	7	11.4	--	--
NOV										
10...	0905	1510	44	7.7	6.1	--	25	11.6	820	23
16...	1100	2630	55	7.1	5.5	65	7	12.7	--	--
DEC										
07...	0945	4220	32	7.1	3.2	--	30	13.1	K400	K6
07...	1100	4130	47	7.2	3.9	30	32	12.8	--	--
JAN , 1978										
05...	1035	1490	54	7.4	4.9	15	5	12.1	--	--
11...	0930	1920	42	7.4	5.7	--	1	12.1	K180	<4
FEB										
09...	1020	1470	47	7.5	4.4	--	2	11.9	K42	K2
16...	1115	715	68	6.9	3.2	10	1	13.2	--	--
MAR										
08...	0920	985	52	7.5	5.0	--	2	12.0	K58	3
22...	1145	630	68	7.7	8.5	10	3	11.8	--	--
APR										
05...	0900	1090	54	7.7	5.4	--	1	11.9	66	5
19...	1045	785	67	7.5	6.9	5	4	11.7	--	--
MAY										
03...	0930	870	56	7.6	6.5	--	1	11.6	780	3
10...	1110	790	63	7.7	9.1	--	--	11.5	--	--
JUN										
14...	0915	875	48	7.4	8.3	--	3	10.6	K600	5
14...	1140	860	55	7.5	9.1	--	5	11.3	--	--
JUL										
19...	0905	745	42	7.3	9.4	--	45	10.5	460	17
26...	1020	905	41	7.3	10.2	65	220	10.1	--	--

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977									
06...	.04	.07	--	--	--	--	.02	.00	.00
NOV									
10...	.10	.03	.15	.18	.28	1.2	.11	.03	.09
16...	.24	.06	--	--	--	--	.04	.00	.00
DEC									
07...	.23	.11	.22	.33	.56	2.5	.10	.01	.03
07...	.23	.04	--	--	--	--	.11	.01	.03
JAN , 1978									
05...	.18	.06	--	--	--	--	.02	.01	.03
11...	.16	.02	.11	.13	.29	1.3	.01	.00	.00
FEB									
09...	.13	.03	.07	.10	.23	1.0	.03	.01	.03
16...	.09	.03	--	--	--	--	.01	.00	.00
MAR									
08...	.11	.05	.06	.11	.22	1.0	.02	.00	.00
22...	.02	.02	--	--	--	--	.01	.00	.00
APR									
05...	.02	.05	.17	.22	.24	1.1	.01	.01	.03
19...	.03	.02	--	--	--	--	.01	.00	.00
MAY									
03...	.05	.05	.01	.06	.11	.50	.01	.01	.03
10...	.02	.02	--	--	--	--	.02	.00	.00
JUN									
14...	.01	.04	.04	.08	.09	.40	.02	.01	.03
14...	.01	.08	--	--	--	--	.02	.01	.03
JUL									
19...	.01	.04	.01	.05	.06	.30	.12	.01	.03
26...	.02	.03	--	--	--	--	.74	.01	.03

K Results based upon colony counts outside the ideal range.

12083400 NISQUALLY RIVER AT ELBE, WA--Continued

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
AUG , 1978										
15...	0910	940	40	7.2	8.3	--	300	10.8	430	45
16...	1045	850	47	7.7	8.8	165	520	11.1	--	--
SEP										
07...	1050	550	68	7.6	9.9	25	27	11.4	--	--
14...	0935	540	56	7.3	9.8	--	9	10.5	K120	3

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
AUG , 1978									
15...	.04	.09	.07	.16	.20	.90	.57	.02	.06
16...	.04	.31	--	--	--	--	.74	.02	.06
SEP									
07...	.04	.10	--	--	--	--	.07	.01	.03
14...	.01	.02	.05	.07	.08	.40	.06	.01	.03

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE¼NW¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi (1.6 km) west of Alder, 1.7 mi (2.7 km) upstream from La Grand Dam, 4.6 mi (7.4 km) upstream from Mashel River, and at mile 44.2 (71.1 km).

DRAINAGE AREA.--286 mi^2 (741 km^2).

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.32 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Capacity, 99,170 acre-ft (122 hm^3) between gage heights 1,114 ft (339.5 m), lower limit of operating range, and 1,177 ft (358.7 m), gage height of spillway. Water can be controlled by spillway gates to gage height 1,207 ft (367.9 m), usable capacity 179,600 acre-ft (221 hm^3). Dead storage below gage height 1,114 ft (339.5 m), 52,110 acre-ft (64.3 hm^3). Figures given herein represent total contents. Water is used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft (288 hm^3) Dec. 4, 1975, gage height 1,207.68 ft (368.101 m); minimum since reservoir first filled, 86,710 acre-ft (107 hm^3), Mar. 26, 1969, gage height, 1,142.77 ft (348.316 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 231,709 acre-ft (286 hm^3) July 3, gage height, 1,206.99 ft (367.891 m); minimum, 112,358 acre-ft (139 hm^3) Mar. 20, gage height, 1,158.23 ft (353.029 m).

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project surveys and maps by city of Tacoma in 1944)

1,144	88,510	1,170	135,800	1,200	210,840
1,150	97,910	1,180	158,260	1,207.7	233,910
1,160	115,690	1,190	183,270		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180950	151834	181306	152019	151788	135904	131640	172718	220510	230779	229260	223300
2	178698	160610	201463	149279	153036	133824	132628	174074	220960	231399	229394	223210
3	176400	163671	202768	147658	154569	131990	133473	175533	221470	231647	229539	223090
4	174023	164259	195714	148706	155617	130110	134219	176732	222550	231337	230159	222850
5	171494	163916	187291	150429	156833	127923	135114	177523	223210	231275	230190	222670
6	169103	162986	184188	151650	158612	125660	135696	178493	224260	231182	230438	222550
7	166835	162266	181332	152643	160422	124860	136029	179158	224530	231058	230562	222070
8	164480	161138	179286	155780	162506	124620	136258	179696	224590	231306	231182	221590
9	161858	160069	179645	159082	164088	123640	136424	180566	224950	231368	231337	221680
10	159364	161354	181638	161090	165141	122140	136587	181383	224980	231368	231089	222220
11	156809	162146	185055	162074	165610	120685	136611	182633	224860	231027	230593	222250
12	154359	162530	184366	162530	165810	118861	136923	183729	225220	230779	230438	221860
13	152412	164039	188323	162674	165585	117191	137194	185949	225790	230624	229942	221620
14	150682	169128	192515	163083	164308	116294	137506	191459	226150	230686	229508	221080
15	148934	172999	190227	163328	162626	114987	137944	196707	226270	230748	230190	220450
16	147202	175252	184443	163059	160398	114018	139009	200680	226270	231306	230531	219910
17	145355	175865	179389	162578	158283	113381	139861	203754	226270	231337	230252	219310
18	144152	175533	176349	161810	156248	113065	141253	206107	226390	231213	230066	218650
19	143439	174279	176528	160658	153963	112674	143193	208172	226510	230779	229725	217840
20	141754	172438	176273	159458	151719	112414	145628	210173	226870	230469	229260	217060
21	140206	170170	175354	159200	149624	112804	147840	212261	227200	230097	228888	216234
22	138072	167960	174023	158918	147863	113306	150567	214233	227170	230438	228370	215857
23	136632	165411	172540	158073	146084	114189	153474	215538	227320	230500	227890	217180
24	136403	163010	170806	156833	144286	115576	155734	216670	227350	230376	227680	217990
25	137214	169078	168646	155687	142636	118763	158377	217090	227470	230562	227110	218470
26	137838	177420	166535	155244	141253	121880	161186	217600	227470	230593	226240	218770
27	138114	179491	164235	154685	139392	124040	164186	218170	227690	231058	225460	218980
28	138285	179696	161834	154266	137693	126080	166585	219190	228340	230779	224530	218890
29	139414	180745	159670	153730	---	127520	169027	219580	229322	230345	223900	218500
30	142391	179517	157394	152874	---	129135	171061	219970	229973	229911	223510	218110
31	144739	---	154802	152135	---	130497	---	220090	---	229694	223180	---
MAX	180950	180745	202768	163328	165810	135904	171061	220090	229973	231647	231337	223300
MIN	136403	151834	154802	147658	137693	112414	131640	172718	220510	229694	223180	215857
†	1,174.14	1,188.53	1,178.52	1,177.37	1,170.91	1,167.43	1,185.22	1,203.15	1,206.43	1,206.34	1,204.18	1,202.49
‡	-38,047	+34,778	-24,715	-2,667	-14,442	-7,196	+40,564	+49,029	+9,883	-279	-6,514	-5,070

CAL YR 1977............................‡+33,082
WTR YR 1978............................‡+35,324

† Gage height, in feet, at end of month.
‡ Change of contents, in acre-feet.

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1977									
10...	0940	1.0	48	7.3	9.9	35	9.9	76	2
10...	0945	20	48	7.3	9.8	30	9.9	70	<1
10...	0950	50	48	7.4	9.8	30	9.9	52	2
10...	0955	100	46	7.3	9.3	30	10.1	160	12
10...	1000	240	47	7.1	7.9	35	10.2	K150	12
DEC									
07...	1000	1.0	45	7.4	5.8	25	11.3	K8	K3
07...	1010	20	43	7.3	5.8	25	11.2	K39	K9
07...	1020	50	42	7.3	5.9	60	11.2	K30	K17
07...	1030	100	35	7.2	5.8	140	11.2	F180	K30
07...	1040	250	27	7.2	5.7	360	10.7	K200	K50
JAN , 1978									
11...	1055	1.0	35	7.4	5.0	10	11.6	K80	<5
11...	1115	20	36	7.3	4.8	10	11.6	110	<5
11...	1125	50	36	7.2	4.6	15	11.6	K35	K5
11...	1145	100	37	7.1	4.3	20	11.6	130	<5
11...	1155	240	39	--	4.2	15	11.6	K20	<5
FEB									
09...	1100	1.0	39	7.4	5.2	6	11.5	K14	K3
09...	1120	20	39	7.4	5.2	6	12.0	K8	<2
09...	1140	50	40	7.4	5.3	6	14.4	K6	<2
09...	1210	100	40	7.4	5.2	6	12.5	K14	2
09...	1230	220	41	7.3	5.1	8	11.5	K25	<2
MAR									
08...	0950	1.0	43	7.2	6.1	4	11.5	K4	18
08...	1000	20	43	7.0	5.6	5	11.4	K12	11
08...	1010	50	43	7.2	5.5	5	11.4	K2	8
08...	1020	100	44	7.2	5.3	5	11.4	K13	<1
08...	1030	160	44	7.2	4.9	5	11.5	K17	<1
APR									
05...	0945	1.0	45	7.5	9.4	4	11.1	K10	<2

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
NOV , 1977									
10...	.03	.05	.03	.08	.11	.50	.06	.01	.03
10...	.03	.04	.11	.15	.18	.80	.07	.01	.03
10...	.03	.05	.07	.12	.15	.70	.06	.01	.03
10...	.05	.04	.09	.13	.18	.80	.06	.01	.03
10...	.15	.04	.09	.13	.28	1.2	.07	.01	.03
DEC									
07...	.14	.05	.06	.11	.25	1.1	.25	.17	.52
07...	.13	.06	.05	.11	.24	1.1	.07	.00	.00
07...	.15	.10	.08	.18	.33	1.5	.12	.01	.03
07...	.16	.18	.16	.34	.50	2.2	.32	.01	.03
07...	.13	.41	.35	.76	.89	3.9	.66	.03	.09
JAN , 1978									
11...	.16	.03	.07	.10	.26	1.2	.03	.01	.03
11...	.19	.04	.07	.11	.30	1.3	.04	.00	.00
11...	.21	.06	.05	.11	.32	1.4	.05	.01	.03
11...	.22	.05	.07	.12	.34	1.5	.05	.01	.03
11...	.30	.07	.10	.17	.47	2.1	.07	.01	.03
FEB									
09...	.16	.08	.02	.10	.26	1.2	.02	.00	.00
09...	.16	.08	.00	.08	.24	1.1	.02	.00	.00
09...	.17	.08	.00	.08	.25	1.1	.02	.00	.00
09...	.17	.07	.01	.08	.25	1.1	.02	.00	.00
09...	.17	.09	.00	.09	.26	1.2	.04	.00	.00
MAR									
08...	.15	.04	.06	.10	.25	1.1	.02	--	--
08...	.15	.02	.08	.10	.25	1.1	.02	.00	.00
08...	.15	.01	.13	.14	.29	1.3	.02	.00	.00
08...	.17	.02	.10	.12	.29	1.3	.02	.00	.00
08...	.15	.01	.11	.12	.27	1.2	.02	.00	.00
APR									
05...	.06	.06	.11	.17	.23	1.0	.02	.00	.00

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
APR , 1978									
05...	1000	20	45	7.6	9.3	4	11.1	<2	<2
05...	1010	50	46	7.5	9.0	4	10.8	K4	<2
05...	1020	100	44	7.4	5.8	3	10.9	K6	<2
05...	1030	210	50	7.2	5.3	2	10.4	K4	<2
MAY									
03...	0950	1.0	49	7.8	9.9	2	11.1	K13	2
03...	1000	20	48	7.4	9.6	3	10.4	10	<1
03...	1010	50	44	7.4	8.2	3	10.7	7	<1
03...	1020	100	47	7.3	7.1	3	10.3	12	<1
03...	1030	220	54	7.2	5.9	5	9.4	K15	<1
JUN									
14...	1000	1.0	50	7.8	17.3	0	9.5	2200	1
14...	1010	20	50	7.8	17.0	0	9.6	3100	<1
14...	1020	50	50	7.8	10.0	1	9.1	310	<1
14...	1030	100	49	7.7	8.8	1	9.0	K82	<1
14...	1040	260	53	7.5	7.8	1	9.0	270	<1
JUL									
19...	1015	1.0	49	7.8	19.0	2	9.6	5	<1
19...	1025	20	48	7.6	16.8	3	8.3	123	<1
19...	1035	50	49	7.3	13.8	2	8.2	680	<1
19...	1045	100	51	7.1	11.5	0	8.1	186	<1
19...	1050	--	52	7.0	9.0	1	8.0	350	<1
AUG									
15...	0940	1.0	40	7.9	18.6	5	8.9	380	5
15...	0955	20	45	7.4	17.4	7	8.0	280	<1
15...	1000	50	48	6.9	14.5	8	7.4	49	<1
15...	1010	100	49	6.5	13.2	3	7.4	33	1
15...	1020	200	45	6.5	11.0	2	7.8	79	<1
SEP									
14...	1010	1.0	52	7.4	16.1	8	8.2	K1300	<1
14...	1020	20	55	7.3	16.0	9	8.2	K1800	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR , 1978									
05...	.06	.06	.11	.17	.23	1.0	.02	.00	.00
05...	.08	.05	.03	.08	.16	.70	.02	.00	.00
05...	.14	.06	.05	.11	.25	1.1	.01	.00	.00
05...	.12	.07	.05	.12	.24	1.1	.02	.00	.00
MAY									
03...	.04	.05	.08	.13	.17	.80	.01	.01	.03
03...	.07	.05	.09	.14	.21	.90	.01	.01	.03
03...	.04	.05	.01	.06	.10	.40	.01	.01	.03
03...	.07	.06	.00	.06	.13	.60	.01	.01	.03
03...	.14	.08	.00	.08	.22	1.0	.02	.01	.03
JUN									
14...	.00	.01	.07	.08	.08	.40	.01	.00	.00
14...	.01	.02	.11	.13	.14	.60	.01	.00	.00
14...	.01	.03	.05	.08	.09	.40	.01	.00	.00
14...	.05	.04	.06	.10	.15	.70	.01	.00	.00
14...	.09	.03	.06	.09	.18	.80	.01	.00	.00
JUL									
19...	.00	.03	.05	.08	.08	.40	.01	.00	.00
19...	.00	.04	.08	.12	.12	.50	.02	.00	.00
19...	.00	.03	.05	.08	.08	.40	.01	.00	.00
19...	.02	.05	.05	.10	.12	.50	.01	.00	.00
19...	.08	.04	.01	.05	.13	.60	.01	.00	.00
AUG									
15...	.00	.05	.05	.10	.10	.40	.03	.01	.03
15...	.00	.05	.02	.07	.07	.30	.02	.00	.00
15...	.00	.06	.05	.11	.11	.50	.02	.00	.00
15...	.00	.03	.04	.07	.07	.30	.01	.00	.00
15...	.03	.02	.00	.02	.05	.20	.02	.00	.00
SEP									
14...	.00	.04	.06	.10	.10	.40	.02	.01	.03
14...	.01	.03	.07	.10	.11	.50	.02	.00	.00

K Results based upon colony counts outside the ideal range.

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
SEP , 1978									
14...	1030	50	51	7.0	14.7	30	7.6	400	<1
14...	1040	100	50	6.9	14.1	20	7.1	390	<1
14...	1050	265	50	6.7	12.8	20	5.8	3200	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
SEP , 1978									
14...	.01	.05	.05	.10	.11	.50	.06	.01	.03
14...	.01	.04	.06	.10	.11	.50	.06	.01	.03
14...	.02	.04	.08	.12	.14	.60	.06	.00	.00

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'23", long 122°18'13", in SW¼SE¼ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 1710015, at left end of gate control structure, 1.1 mi (1.8 km) southeast of La Grande, 1.7 mi (2.7 km) downstream from Alder Dam, and at mile 42.5 (68.4 km).

DRAINAGE AREA.--289 mi^2 (749 km^2).

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.320 m) below National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by city of Tacoma from temporary gages in pool above dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Usable storage, 1,053 acre-ft (1.30 hm^3) between gage heights 910 ft (277.4 m), minimum practical head, and 935 ft (285.0 m), normal reservoir level. Dead storage below gage height 910 ft (277.4 m), 1,629 acre-ft (2.01 hm^3). Figures given herein represent total contents. Water used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft (3.40 hm^3), May 14, 1950, gage height, 936.4 ft (285.41 m); minimum observed since reservoir first filled, 1,370 acre-ft (1.69 hm^3) Aug. 24, 1956, gage height, 900.0 ft (274.32 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,703 acre-ft (3.33 hm^3) Nov. 24, gage height, 935.38 ft (285.104 m); minimum contents, 1,760 acre-ft (2.17 hm^3) Aug. 9, gage height, 914.27 ft (278.669 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	931.51	2,495	-----
Oct. 31	932.27	2,534	+39
Nov. 30	933.40	2,595	+61
Dec. 31	931.76	2,508	-87
CAL YR 1977	------	-----	+39
Jan. 31	933.03	2,574	+66
Feb. 28	934.01	2,628	+54
Mar. 31	932.46	2,544	-84
Apr. 30	931.42	2,490	-54
May 31	930.26	2,430	-60
June 30	931.50	2,494	+64
July 31	929.38	2,386	-108
Aug. 31	929.30	2,382	-4
Sept.30	931.04	2,470	+88
WTR YR 1978	------	-----	-25

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Descriptive location given is for reservoir outlet. Samples taken elsewhere within reservoir body.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
10...	0945	1.0	46	7.3	8.3	35	10.9
10...	0950	20	46	7.2	8.3	35	11.0
DEC							
07...	1030	1.0	33	6.8	5.8	160	12.4
07...	1045	20	33	7.0	5.8	160	12.4
07...	1100	50	32	7.1	5.8	160	12.4
JAN , 1978							
11...	1020	1.0	40	7.4	5.7	20	12.0
11...	1035	20	39	7.4	4.5	15	12.0
11...	1050	50	39	7.4	4.4	15	12.0
FEB							
09...	1120	1.0	48	7.4	5.2	6	12.5
09...	1140	20	46	7.4	5.1	5	12.5
09...	1205	50	45	7.4	5.1	4	12.5
MAR							
08...	0955	1.0	48	7.4	5.7	5	11.7
08...	1010	20	48	7.4	5.5	5	11.8
08...	1025	50	48	7.4	5.5	5	11.8
APR							
05...	0950	1.0	50	7.2	5.8	2	11.8
05...	1005	20	50	7.2	5.7	3	11.7
05...	1015	50	50	7.2	5.4	3	11.7
MAY							
03...	1005	1.0	54	6.9	7.6	3	11.2
03...	1020	20	54	7.0	6.6	3	10.9
03...	1035	50	54	7.0	6.3	3	11.1
JUN							
14...	0950	1.0	52	7.0	8.4	1	10.4
14...	1000	20	51	7.0	8.1	1	10.4
14...	1010	50	51	7.0	8.0	1	10.4
JUL							
19...	0940	1.0	50	7.1	9.9	1	9.1
19...	0950	20	50	7.1	9.0	1	9.5
19...	1000	50	51	7.1	8.7	1	9.5

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
10...	170	12	.16	.04	.16	.08	.00
10...	180	11	.16	.05	.15	.08	.00
DEC							
07...	K400	K30	.14	.11	.32	.30	.00
07...	E210	K30	.13	.13	.29	.29	.01
07...	4000	K30	.16	.15	.29	.30	.00
JAN , 1978							
11...	K30	K10	.22	.05	.16	.05	.01
11...	K10	<5	.22	.04	.15	.05	.01
11...	K90	K5	.25	.06	.16	.05	.01
FEB							
09...	120	<2	.18	.10	.11	.02	.00
09...	K14	<2	.20	.11	.11	.02	.00
09...	K47	<2	.18	.08	.09	.02	.00
MAR							
08...	K109	<1	.15	.02	.09	.02	.00
08...	K82	<1	.15	.01	.07	.02	.00
08...	56	<1	.16	.00	.10	.02	.00
APR							
05...	K2	<2	.12	.05	.10	.02	.00
05...	<10	<2	.13	.05	.13	.02	.00
05...	<10	<2	.13	.07	.13	.02	.00
MAY							
03...	K55	<1	.13	.09	.11	.01	.01
03...	K64	<1	.13	.08	.11	.01	.00
03...	K13	<1	.12	.07	.13	.01	.00
JUN							
14...	K170	5	.06	.03	.08	.01	.00
14...	10	<1	.07	.03	.07	.01	.00
14...	K45	<1	.07	.03	.06	.01	.00
JUL							
19...	360	4	.08	.03	.07	.01	.00
19...	340	3	.06	.03	.08	.01	.00
19...	E90	1	.06	.04	.09	.01	.00

E Estimated.

K Results based upon colony counts outside the ideal range.

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
AUG , 1978							
16...	1015	1.0	51	7.1	11.8	2	9.1
16...	1030	20	50	7.0	11.1	2	9.0
16...	1050	50	50	7.0	10.1	2	8.7
SEP							
14...	1005	1.0	49	6.9	13.1	8	8.4
14...	1015	20	49	6.9	12.8	10	7.9
14...	1030	50	49	6.9	12.8	8	8.0

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
AUG , 1978							
16...	48	9	.03	.03	.07	.01	.00
16...	78	2	.03	.02	.05	.01	.00
16...	170	<1	.03	.03	.05	.01	.00
SEP							
14...	K150	3	.01	.04	.12	.03	.00
14...	600	2	.01	.03	.07	.03	.00
14...	710	<1	.01	.04	.08	.03	.00

K Results based upon colony counts outside the ideal range.

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW¼SE¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi (0.6 km) downstream from city of Tacoma powerplant, 0.6 mi (1.0 km) northwest of La Grande, 0.8 mi (1.3 km) upstream from Mashel River, and at mile 40.4 (65.0 km).

DRAINAGE AREA.--292 mi² (756 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" 1906-10, and as "near La Grande" 1912, 1919-31.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD Wash. 1974: 1956(M). 1959-61(M), 1965.

GAGE.--Water-stage recorder. Altitude of gage is 490 ft (149 m), from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--Water-discharge records excellent. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see preceding page) since February 1945. All diversions returned to river above gage.

AVERAGE DISCHARGE.--52 years (water years 1907-11, 1920-31, 1944-78), 1,436 ft³/s (40.67 m³/s) 66.78 in/yr (1,696 mm/yr), 1,040,000 acre-ft/yr (1,280 hm³/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s (767 m³/s) Dec. 4, 1975, gage height, 11.90 ft (3.627 m); practically no flow on many occasions at site "near La Grande" (which excluded diversion) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,820 ft³/s (278 m³/s) Dec. 3, gage height, 7.84 ft (2.390 m); minimum, 232 ft³/s (6.57 m³/s) July 26, gage height, 2.67 ft (0.814 m); minimum dialy discharge, 398 ft³/s (11.3 m³/s) Apr. 21, 22, 29, 30, May 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1860	908	4390	2370	1460	1870	635	406	882	601	828	918
2	1860	1510	8100	2370	1440	1870	635	398	891	652	792	918
3	1860	1670	9670	2340	1440	1870	635	414	882	783	783	918
4	1860	1870	9590	2010	1440	1870	635	422	882	954	765	918
5	1870	1880	8630	2150	1440	1870	635	446	1000	963	765	909
6	1870	1870	7410	2230	1410	1870	711	470	927	963	765	900
7	1870	1870	7320	2010	1370	1880	783	510	1030	936	765	855
8	1860	1860	5170	2020	1380	1880	783	542	1120	846	765	846
9	1880	1850	2780	2020	1370	1880	783	542	1190	828	792	900
10	1870	1870	3620	2020	1390	1870	792	542	1180	828	837	918
11	1870	1870	7910	2020	1380	1870	747	542	1040	828	783	918
12	1800	1860	8870	2020	1380	1870	643	494	864	828	765	918
13	1510	1870	8930	2020	1390	1790	643	486	864	819	765	909
14	1470	2140	9490	2020	1730	1500	643	438	873	801	756	918
15	1480	2350	8800	2020	2020	1480	643	414	873	801	765	918
16	1480	2390	8000	2040	2040	1370	669	430	873	837	765	909
17	1470	2400	7000	2020	2040	1150	660	406	864	972	756	909
18	1150	2400	5420	2010	2040	1050	652	422	873	1010	756	909
19	876	2400	2700	2010	2040	1050	652	446	873	1010	756	918
20	1330	2410	2390	2010	2020	900	575	470	873	1020	756	918
21	1380	2400	2390	2010	1960	643	406	526	873	954	756	909
22	1400	2410	2370	2020	1870	643	398	526	873	927	765	909
23	1300	2440	2390	2020	1870	643	398	526	837	927	756	918
24	1090	2860	2370	2020	1870	643	406	534	810	927	837	918
25	709	3470	2370	1970	1870	635	414	652	810	927	918	873
26	721	5360	2370	1470	1870	635	406	703	738	918	918	846
27	739	4840	2370	1460	1870	643	406	703	660	927	909	846
28	705	4900	2370	1460	1870	643	406	703	609	927	909	846
29	706	4910	2370	1440	---	643	398	756	609	927	909	891
30	719	4730	2370	1440	---	635	398	873	601	927	918	918
31	717	---	2370	1440	---	635	---	873	---	891	918	---
TOTAL	43362	77578	162300	60480	47270	39801	17590	16615	26274	27459	24993	27018
MEAN	1399	2586	5235	1951	1688	1284	586	536	876	886	806	901
MAX	1880	5360	9670	2370	2040	1880	792	873	1190	1020	918	918
MIN	705	908	2370	1440	1370	635	398	398	601	601	756	846
AC-FT	86010	153900	321900	120000	93760	78950	34890	32960	52110	54460	49570	53590
†	-38,008	+34,839	-24,802	-2,601	-14,388	-7,280	+40,510	+48,969	+9,947	-387	-6,518	-4,982
MEAN‡	780	3,172	4,831	1,909	1,429	1,165	1,267	1,332	1,043	879	700	817
CFSM‡	2.67	10.9	16.5	6.54	4.89	3.99	4.34	4.56	3.57	3.01	2.40	2.80
IN.‡	3.08	12.12	19.08	7.54	5.10	4.60	4.84	5.26	3.98	3.47	2.76	3.12
AC-FT‡	48,000	188,700	297,100	117,400	79,370	71,670	75,400	81,930	62,060	54,070	43,050	48,610

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CAL YR 1977  TOTAL  540,389   MEAN   1,481   MAX  9,670   MIN  391   AC-FT  1,072,000
   DO.....   MEAN‡    1,526   CFSM‡   5.23   IN‡  70.95   AC-FT‡  1,105,000
WTR YR 1978  TOTAL  570,740   MEAN   1,564   MAX  9,670   MIN  398   AC-FT  1,132,000
   DO.....   MEAN‡    1,612   CFSM‡   5.52   IN‡  74.93   AC-FT‡  1,167,000
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† Change in contents, in acre-feet, in Alder and La Grande Reservoirs.
‡ Adjusted for change in reservoir contents.

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1965 to current year.

INSTRUMENTATION.--Temperature recorder since 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 14.5°C Sept. 21-24, 26, 27, 1973; minimum, 2.0°C Jan. 19-21, 1972, Jan. 23, 24, 27-31, 1973, Dec. 21, 22, 30, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 13.5°C Oct. 1, Sept. 21-26, 30; minimum, 4.5°C Jan. 10-14.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
10...	1030	1860	46	--	8.4	35	11.1
DEC							
07...	1145	7330	33	6.5	6.0	160	12.5
JAN , 1978							
11...	1130	2010	40	7.4	4.7	15	12.2
FEB							
09...	1255	1380	48	7.5	5.1	6	12.8
MAR							
08...	1105	1900	48	7.4	5.8	5	12.2
APR							
05...	1045	626	51	7.4	5.9	2	13.0
MAY							
03...	1105	398	56	7.2	7.1	3	11.2
JUN							
14...	1040	873	52	6.8	8.3	1	11.6
JUL							
19...	1030	1020	51	7.2	9.4	1	10.6
AUG							
16...	1045	756	50	7.2	11.4	2	10.9
SEP							
14...	1100	918	49	6.8	1.3	10	9.7

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
10...	160	14	.16	.04	.19	.09	.00
DEC							
07...	K1300	K35	.15	.16	.39	.31	.09
JAN , 1978							
11...	K110	<5	.25	.06	.16	.05	.01
FEB							
09...	110	<2	.18	.10	.14	.02	.00
MAR							
08...	K45	6	.16	.01	.08	.02	.00
APR							
05...	K6	<2	.14	.05	.10	.02	.00
MAY							
03...	K18	1	.15	.07	.07	.01	.00
JUN							
14...	49	3	.08	.03	.13	.01	.00
JUL							
19...	330	2	.06	.04	.09	.01	.00
AUG							
16...	460	2	.03	.03	.12	.01	.00
SEP							
14...	K840	2	.01	.03	.08	.03	.01

K Results based upon colony counts outside the ideal range.

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	13.0	13.0	11.0	10.5	11.0	8.5	6.0	6.5	5.0	5.0	5.0
2	13.0	13.0	13.0	10.5	10.5	10.5	9.0	8.0	9.0	5.0	5.0	5.0
3	13.0	13.0	13.0	10.0	9.5	10.0	8.0	7.5	8.0	5.0	5.0	5.0
4	13.0	13.0	13.0	9.5	9.0	9.5	8.0	7.5	7.5	5.0	5.0	5.0
5	13.0	13.0	13.0	9.0	8.5	8.5	8.0	8.0	8.0	5.0	5.0	5.0
6	13.0	13.0	13.0	8.5	8.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
7	13.0	13.0	13.0	8.0	8.0	8.0	8.0	8.0	8.0	5.0	5.0	5.0
8	13.0	13.0	13.0	8.0	8.0	8.0	8.0	6.0	7.0	5.0	5.0	5.0
9	13.0	13.0	13.0	8.5	8.0	8.5	6.5	6.0	6.0	5.0	5.0	5.0
10	12.5	12.5	12.5	8.5	8.5	8.5	8.5	6.5	6.5	5.0	4.5	4.5
11	12.5	12.5	12.5	8.5	8.5	8.5	8.5	8.0	8.5	4.5	4.5	4.5
12	12.5	12.5	12.5	8.5	8.5	8.5	8.5	8.0	8.0	4.5	4.5	4.5
13	12.5	12.5	12.5	8.5	8.5	8.5	8.0	7.5	8.0	4.5	4.5	4.5
14	12.5	12.5	12.5	8.5	8.5	8.5	8.0	7.5	8.0	5.0	4.5	4.5
15	12.5	12.5	12.5	8.5	8.0	8.0	---	---	---	5.0	5.0	5.0
16	13.0	12.5	12.5	8.0	8.0	8.0	---	---	---	5.0	5.0	5.0
17	12.5	12.5	12.5	8.0	8.0	8.0	8.0	7.5	7.5	5.0	5.0	5.0
18	12.5	12.5	12.5	8.0	7.5	8.0	8.0	5.5	6.5	5.0	5.0	5.0
19	12.5	12.5	12.5	7.5	7.5	7.5	5.5	5.5	5.5	5.0	5.0	5.0
20	12.5	12.5	12.5	7.5	7.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
21	12.5	12.5	12.5	7.0	7.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
22	12.5	12.5	12.5	7.0	7.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
23	12.5	12.5	12.5	7.0	6.5	6.5	5.5	5.5	5.5	5.0	5.0	5.0
24	12.5	12.0	12.0	6.5	6.5	6.5	5.5	5.5	5.5	5.0	5.0	5.0
25	12.0	12.0	12.0	9.5	6.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
26	12.0	12.0	12.0	10.0	6.5	8.0	5.5	5.0	5.5	5.0	5.0	5.0
27	12.0	11.5	12.0	7.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
28	12.0	12.0	12.0	7.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
29	12.0	11.5	11.5	7.0	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
30	11.5	11.0	11.0	6.5	6.5	6.5	5.0	5.0	5.0	5.0	5.0	5.0
31	11.0	10.5	11.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
MONTH	13.5	10.5	12.5	11.0	6.0	8.0	9.0	5.0	6.5	5.0	4.5	5.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	7.0	7.5
2	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.5	7.0	7.5
3	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	6.5	7.0
4	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	8.0	6.5	7.0
5	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	9.0	6.5	7.0
6	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.5	6.0	9.0	6.5	7.0
7	5.0	5.0	5.0	5.5	5.0	5.5	6.0	5.5	6.0	8.0	7.0	7.0
8	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.0	8.0	7.0	7.5
9	5.0	5.0	5.0	5.5	5.0	5.0	6.5	6.0	6.0	7.5	7.0	7.0
10	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	7.5	7.0	7.0
11	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	7.0	7.5
12	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	7.0	7.5
13	5.0	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	7.5	7.5
14	5.5	5.0	5.0	5.0	5.0	5.0	6.5	6.0	6.0	8.0	7.0	7.5
15	5.0	5.0	5.0	5.5	5.0	5.0	6.5	6.0	6.0	9.0	7.0	7.5
16	5.0	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.0	8.5	7.0	7.5
17	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.0	8.5	7.0	7.5
18	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5	9.5	7.0	8.0
19	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5	10.0	7.5	8.0
20	5.0	5.0	5.0	6.0	5.5	5.5	7.5	6.0	6.5	10.0	8.0	8.5
21	5.0	5.0	5.0	6.0	5.5	6.0	7.5	6.0	6.5	9.5	7.5	8.0
22	5.0	5.0	5.0	6.5	6.0	6.0	7.5	6.0	6.5	8.5	7.5	8.0
23	5.0	5.0	5.0	6.5	6.0	6.0	8.0	6.0	7.0	9.0	7.5	8.0
24	5.0	5.0	5.0	6.0	6.0	6.0	8.5	6.5	7.5	8.0	7.5	8.0
25	5.0	5.0	5.0	6.0	6.0	6.0	8.0	7.0	7.0	8.0	7.5	7.5
26	5.0	5.0	5.0	6.0	5.5	6.0	7.0	7.0	7.0	7.5	7.5	7.5
27	5.0	5.0	5.0	6.5	6.0	6.0	7.5	6.5	7.0	8.0	7.5	7.5
28	5.0	5.0	5.0	6.0	5.5	6.0	8.0	7.0	7.0	8.0	7.5	7.5
29	---	---	---	6.0	5.5	6.0	8.5	6.5	7.0	8.0	7.5	7.5
30	---	---	---	6.0	5.5	6.0	8.0	6.5	7.0	8.0	7.5	7.5
31	---	---	---	6.5	5.5	6.0	---	---	---	8.0	7.5	8.0
MONTH	5.5	5.0	5.0	6.5	5.0	5.5	8.5	5.5	6.5	10.0	6.5	7.5

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	8.0	8.0	9.5	9.0	9.0	10.5	10.0	10.0	12.5	12.0	12.0
2	8.0	8.0	8.0	9.5	9.0	9.0	10.5	10.0	10.5	12.5	12.0	12.0
3	8.5	8.0	8.0	9.0	9.0	9.0	11.0	10.5	10.5	12.5	12.0	12.5
4	8.5	8.0	8.0	9.0	9.0	9.0	11.0	10.5	10.5	12.5	12.0	12.5
5	8.5	8.0	8.0	9.0	9.0	9.0	11.0	10.5	10.5	12.5	12.5	12.5
6	8.5	8.0	8.0	9.5	9.0	9.0	11.0	10.5	10.5	12.5	12.5	12.5
7	8.5	8.0	8.0	9.5	9.0	9.0	11.0	10.5	10.5	12.5	12.5	12.5
8	8.0	8.0	8.0	9.5	9.0	9.0	11.0	10.5	11.0	12.5	12.5	12.5
9	8.0	8.0	8.0	9.5	9.0	9.5	13.0	11.0	11.5	12.5	12.5	12.5
10	8.0	8.0	8.0	9.5	9.0	9.0	11.5	10.5	11.0	13.0	12.5	12.5
11	8.5	8.0	8.0	9.5	9.0	9.0	11.0	10.5	10.5	13.0	12.5	12.5
12	8.5	8.0	8.5	10.0	9.0	9.5	11.0	10.5	10.5	13.0	12.5	12.5
13	9.0	8.5	8.5	10.0	9.5	9.5	11.0	10.5	11.0	13.0	13.0	13.0
14	8.5	8.5	8.5	10.0	9.5	9.5	11.0	11.0	11.0	13.0	13.0	13.0
15	8.5	8.5	8.5	9.5	9.0	9.5	11.0	11.0	11.0	13.0	13.0	13.0
16	8.5	8.5	8.5	9.5	9.0	9.5	11.0	11.0	11.0	13.0	13.0	13.0
17	9.0	8.5	8.5	9.5	9.0	9.5	11.5	11.0	11.0	13.0	13.0	13.0
18	9.0	8.5	8.5	9.5	9.0	9.5	11.5	11.0	11.5	13.0	13.0	13.0
19	9.0	8.5	8.5	10.0	9.5	9.5	11.5	11.0	11.5	13.0	13.0	13.0
20	9.0	8.5	9.0	10.0	9.5	9.5	11.5	11.0	11.0	13.0	13.0	13.0
21	9.0	8.5	9.0	10.0	9.5	9.5	11.5	11.5	11.5	13.5	13.0	13.0
22	9.0	8.5	8.5	10.0	9.5	10.0	11.5	11.5	11.5	13.5	13.0	13.0
23	9.0	8.5	9.0	10.0	9.5	10.0	11.5	11.5	11.5	13.5	13.5	13.5
24	9.0	8.5	9.0	10.5	9.5	9.5	11.5	11.5	11.5	13.5	13.0	13.5
25	9.0	8.5	8.5	10.0	10.0	10.0	12.0	11.5	11.5	13.5	13.5	13.5
26	9.5	8.5	9.0	10.0	9.5	10.0	12.0	11.5	11.5	13.5	13.0	13.5
27	10.0	8.5	9.0	10.0	9.5	9.5	12.0	11.5	12.0	13.0	13.0	13.0
28	10.0	9.0	9.5	10.5	9.5	10.0	12.0	12.0	12.0	13.0	13.0	13.0
29	9.5	9.0	9.0	10.5	10.0	10.0	12.0	12.0	12.0	13.0	13.0	13.0
30	9.5	9.0	9.0	10.5	10.0	10.0	12.0	12.0	12.0	13.5	13.0	13.0
31	---	---	---	10.5	10.0	10.0	12.0	12.0	12.0	---	---	---
MONTH	10.0	8.0	8.5	10.5	9.0	9.5	13.0	10.0	11.0	13.5	12.0	13.0
YEAR	13.5	4.5	8.0									

12088400 NISQUALLY RIVER ABOVE POWELL CREEK, NEAR MCKENNA, WA

LOCATION.--Lat 46°51'03", long 122°26'06", in SE¼SW¼ sec.21, T.16 N., R.3 E., Thurston County, Hydrologic Unit 17110015, on left bank 400 ft (122 m) downstream from logging bridge, 1.8 mi (2.9 km) upstream from Tanwax Creek, 10 mi (16 km) southeast of Yelm, and at mile 32.6 (52.5 km).

DRAINAGE AREA.--431 mi^2 (1,116 km^2). Area at site used 1941-63, 445 mi^2 (1,153 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1941 to July 1963 (published as Nisqually River near McKenna), March 1969 to current year.

REVISED RECORDS.--WSP 1286: 1947.

GAGE.--Water-stage recorder. Datum of gage is 388.94 ft (118.549 m) National Geodetic Vertical Datum of 1929. Prior to July 3, 1963, at site 1 mi (1.6 km) downstream at different datum.

REMARKS.--Water-discharge records excellent. No diversion above station. Major portion of flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see sta 12085500) since February 1945.

AVERAGE DISCHARGE.--30 years (water years 1942-62, 1970-78), 1,840 ft^3/s (52.11 m^3/s), 1,333,000 acre-ft/yr (1,640 hm^3/yr) unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft^3/s (869 m^3/s) Dec. 4, 1975, gage height, 11.97 ft (3.648 m) from rating curve extended above 20,000 ft^3/s (566 m^3/s); minimum, 85 ft^3/s (2.41 m^3/s) Oct. 19, 1945, gage height, 2.57 ft (0.783 m), site and datum then in use; minimum daily, 176 ft^3/s (4.98 m^3/s) Jan. 30, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,900 ft^3/s (422 m^3/s) Dec. 2, gage height, 9.11 ft (2.777 m); minimum, 668 ft^3/s (18.9 m^3/s) May 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2060	1290	5060	2400	1640	1880	800	790	930	695	830	976
2	1990	2370	13200	2380	1830	1870	790	740	930	713	800	976
3	1960	2130	12400	2410	1840	1870	780	722	920	800	790	964
4	1940	2190	10900	2360	1770	1940	770	713	910	920	770	964
5	1970	2110	9480	2500	1740	1920	800	704	988	940	770	1000
6	1960	2030	8260	2820	1710	1900	850	686	930	940	770	1020
7	1970	2060	8410	2410	1660	2010	890	695	1010	930	770	976
8	1960	2020	5800	2480	1760	2270	870	704	1080	860	770	952
9	1960	2000	3070	2500	1690	2120	860	695	1180	840	780	976
10	1940	2320	3800	2500	1640	2030	850	695	1260	840	810	1050
11	1940	2320	9650	2430	1590	1980	830	722	1220	860	800	1040
12	1890	2190	10900	2380	1530	2000	750	740	976	860	780	1010
13	1590	2380	12000	2360	1500	1900	740	722	964	850	790	988
14	1520	2770	13200	2410	1770	1630	750	860	976	820	780	988
15	1510	3000	12600	2360	2060	1560	770	952	1000	820	790	988
16	1510	2910	11200	2320	2040	1460	976	910	988	870	810	976
17	1500	2780	8170	2280	2030	1280	1160	810	964	1000	830	1000
18	1260	2680	5950	2240	2030	1170	1130	740	940	1010	810	1020
19	987	2610	3240	2220	2030	1140	1190	722	930	1000	810	1000
20	1280	2540	2750	2190	2010	1050	1180	704	920	1000	820	988
21	1390	2500	2660	2400	1940	820	988	713	910	952	810	988
22	1400	2480	2590	2500	1850	790	1020	704	900	910	840	988
23	1390	2480	2530	2360	1850	790	1050	704	880	900	830	1100
24	1240	2950	2500	2300	1850	810	964	695	850	900	880	1120
25	942	3860	2480	2240	1850	840	900	770	850	900	952	1040
26	1130	6710	2440	1780	1910	830	890	850	810	900	952	976
27	1020	5440	2410	1710	1900	810	1070	870	750	910	930	964
28	942	5560	2410	1690	1880	810	1050	880	713	910	930	964
29	978	5650	2430	1670	---	820	920	880	704	900	920	988
30	1210	5240	2440	1640	---	810	840	952	695	890	920	1010
31	1320	---	2430	1620	---	810	---	940	---	870	952	---
TOTAL	47659	89570	197360	69860	50900	43920	27428	23984	28078	27510	25796	29990
MEAN	1537	2986	6366	2254	1818	1417	914	774	936	887	832	1000
MAX	2060	6710	13200	2820	2060	2270	1190	952	1260	1010	952	1120
MIN	942	1290	2410	1620	1500	790	740	686	695	695	770	952
AC-FT	94530	177700	391500	138600	101000	87120	54400	47570	55690	54570	51170	59490

CAL YR 1977 TOTAL 646331 MEAN 1771 MAX 13200 MIN 570 AC-FT 1282000
WTR YR 1978 TOTAL 662055 MEAN 1814 MAX 13200 MIN 686 AC-FT 1313000

12088400 NISQUALLY RIVER ABOVE POWELL CREEK NEAR MCKENNA, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At logging road bridge, 400 ft upstream from gage.

PERIOD OF RECORD.--Water years 1973, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
06...	1005	1930	60	6.9	12.3	40	35
NOV							
16...	1020	2950	59	7.0	7.7	40	20
DEC							
07...	1010	8440	45	6.9	6.0	130	120
JAN , 1978							
05...	1000	2120	48	7.4	5.4	65	25
FEB							
16...	1025	2040	53	6.9	5.0	30	5
MAR							
22...	1025	790	67	7.1	7.4	30	8
APR							
19...	0950	1200	56	7.5	7.6	65	11
MAY							
10...	1015	695	63	7.6	9.1	--	--
JUN							
14...	1030	976	61	7.5	9.9	--	2
JUL							
26...	0930	890	56	7.4	10.9	15	1
AUG							
16...	1000	810	57	7.6	11.6	10	2
SEP							
07...	1000	988	61	7.4	12.9	25	7

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
06...	10.1	.04	.23	.06	.00	.00
NOV						
16...	12.1	.18	.16	.07	.01	.03
DEC						
07...	12.9	.21	.11	.24	.01	.03
JAN , 1978						
05...	12.2	.29	.15	.07	.02	.06
FEB						
16...	12.8	.18	.06	.02	.00	.00
MAR						
22...	12.0	.13	.05	.03	.00	.00
APR						
19...	11.8	.22	.06	.04	.01	.03
MAY						
10...	11.9	.14	.04	.02	.01	.03
JUN						
14...	11.7	.08	.09	.01	.00	.00
JUL						
26...	10.4	.04	.02	.01	.00	.00
AUG						
16...	11.2	.02	.06	.01	.00	.00
SEP						
07...	10.9	.02	.07	.02	.01	.03

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8 (35.1 km).

DRAINAGE AREA.--517 mi^2 (1,339 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to September 1968, May 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft (87.011 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1968, water-stage recorder at site 100 ft (30.5 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. Flow regulated by Alder Reservoir (see sta 12085000) at mile 44.2 (71.1 km) and La Grande Reservoir (see sta 12085500) at mile 42.5 (68.4 km). Centralia power canal diverts water 4.4 mi (7.1 km) upstream from station, which is returned to river at powerplant 9.2 mi (14.8 km) downstream from station. Minor diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft^3/s (728 m^3/s) Jan. 29, 1965, gage height, 13.00 ft (3.962 km) at site then in use; minimum, 20 ft^3/s (0.57 m^3/s) Sept. 10, 11, 1965, Aug. 31, 1966; minimum gage height, 0.75 ft (0.229 m) Aug. 13, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,600 ft^3/s (413 m^3/s) Dec. 2, gage height, 10.27 ft (3.130 m); minimum, 330 ft^3/s (9.35 m^3/s) June 24, gage height, 1.71 ft (0.521 m); minimum daily, 383 ft^3/s (10.8 m^3/s) Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1220	628	3860	1670	1020	1230	490	533	540	420	441	549
2	1160	1760	11900	1640	1180	1210	493	511	535	440	400	549
3	1130	1530	12000	1670	1200	1200	505	504	521	520	387	542
4	1100	1590	10200	1690	1130	1280	503	507	512	569	392	545
5	1060	1410	8680	1680	1100	1270	518	504	568	564	391	565
6	1060	1230	7400	2120	1100	1230	530	507	557	564	387	595
7	1090	1240	7660	1720	1030	1310	536	513	603	558	388	558
8	1070	1220	5490	1780	1130	1580	505	514	649	486	383	533
9	1080	1200	2570	1810	1060	1450	506	496	745	455	403	548
10	1060	1500	2950	1820	1020	1350	501	501	810	450	438	610
11	1060	1580	8400	1780	970	1300	503	513	803	452	406	610
12	1030	1450	9700	1730	932	1320	496	511	578	451	384	587
13	752	1580	10400	1720	906	1240	498	506	568	444	393	571
14	682	1940	11700	1790	1060	1000	504	551	570	419	390	575
15	688	2320	11100	1730	1370	931	521	574	590	417	410	575
16	688	2220	10000	1680	1360	874	576	536	589	457	421	569
17	676	2060	7150	1630	1340	700	613	503	552	593	429	586
18	640	1920	5200	1590	1330	634	591	501	547	617	410	612
19	604	1850	2740	1560	1330	686	672	500	525	606	409	591
20	700	1770	2100	1520	1310	615	723	495	520	602	422	581
21	688	1700	1990	1710	1260	460	565	469	514	566	432	586
22	694	1700	1930	1870	1170	526	595	431	503	516	463	593
23	713	1670	1870	1740	1160	530	651	432	525	514	467	685
24	676	2300	1820	1640	1160	537	559	430	484	511	474	727
25	616	2580	1800	1580	1190	546	511	438	520	506	554	659
26	604	6130	1760	1210	1240	528	541	454	470	512	522	593
27	564	4580	1730	1110	1230	494	647	470	415	512	510	583
28	553	4660	1700	1080	1210	502	649	488	410	515	499	595
29	575	4710	1720	1070	---	519	544	478	430	510	492	615
30	670	4400	1760	1040	---	502	537	559	425	506	494	633
31	700	---	1720	1010	---	511	---	549	---	486	521	---
TOTAL	25603	66428	171000	49390	32498	28065	16583	15478	16578	15738	13512	17720
MEAN	826	2214	5516	1593	1161	905	553	499	553	508	436	591
MAX	1220	6130	12000	2120	1370	1580	723	574	810	617	554	727
MIN	553	628	1700	1010	906	460	490	430	410	417	383	533
AC-FT	50780	131800	339200	97970	64460	55670	32890	30700	32880	31220	26800	35150

WTR YR 1978 TOTAL 468593 MEAN 1284 MAX 12000 MIN 383 AC-FT 929500

12089500 NISQUALLY RIVER AT MCKENNA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1977									
10...	1110	1550	48	7.1	8.6	30	11.5	2300	440
DEC									
07...	1230	7620	35	7.2	5.8	120	12.0	K200	K50
JAN , 1978									
11...	1215	1770	46	7.4	5.8	15	11.9	K350	K67
FEB									
09...	1350	1070	52	7.4	5.8	6	12.3	K220	46
MAR									
08...	1200	1600	50	7.4	6.9	5	12.5	K64	15
APR									
05...	1130	503	58	7.9	8.5	2	12.4	50	27
MAY									
03...	1155	498	61	7.6	9.3	2	11.8	K500	16
JUN									
14...	1130	569	56	7.4	10.7	2	11.7	K1000	37
JUL									
19...	1115	598	55	7.4	11.5	1	10.9	610	9
AUG									
16...	1245	410	56	7.6	13.9	1	10.5	200	1
SEP									
14...	1145	569	54	7.6	13.6	7	10.7	580	27

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1977									
10...	.17	.05	.21	.26	.43	1.9	.08	.01	.03
DEC									
07...	.22	.14	.19	.33	.55	2.4	.26	.01	.03
JAN , 1978									
11...	.32	.10	.14	.24	.56	2.5	.05	.03	.09
FEB									
09...	.27	.15	.05	.20	.47	2.1	.03	.02	.06
MAR									
08...	.23	.03	.15	.18	.41	1.8	.03	.01	.03
APR									
05...	.13	.07	.14	.21	.34	1.5	.02	.01	.03
MAY									
03...	.14	.08	.08	.16	.30	1.3	.02	.01	.03
JUN									
14...	.05	.06	.10	.16	.21	.90	.02	.01	.03
JUL									
19...	.03	.05	.05	.10	.13	.60	.01	.01	.03
AUG									
16...	.01	.03	.06	.09	.10	.40	.01	.00	.00
SEP									
14...	.02	.07	.06	.13	.15	.70	.03	.01	.03

K Results based upon colony counts outside the ideal range.

12090240 NISQUALLY RIVER AT NISQUALLY, WA

LOCATION.--Lat 47°03'43", long 122°41'42", in SW¼NW¼ sec.9, T.18 N., R.1 E., Pierce County, Hydrologic Unit 17110015, at old Pacific Highway bridge, 0.3 mi (0.5 km) northeast of Nisqually.

DRAINAGE AREA.--712 mi^2 (1,844 km^2).

PERIOD OF RECORD.--Water years 1968 (partial-record station), 1973, 1976 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

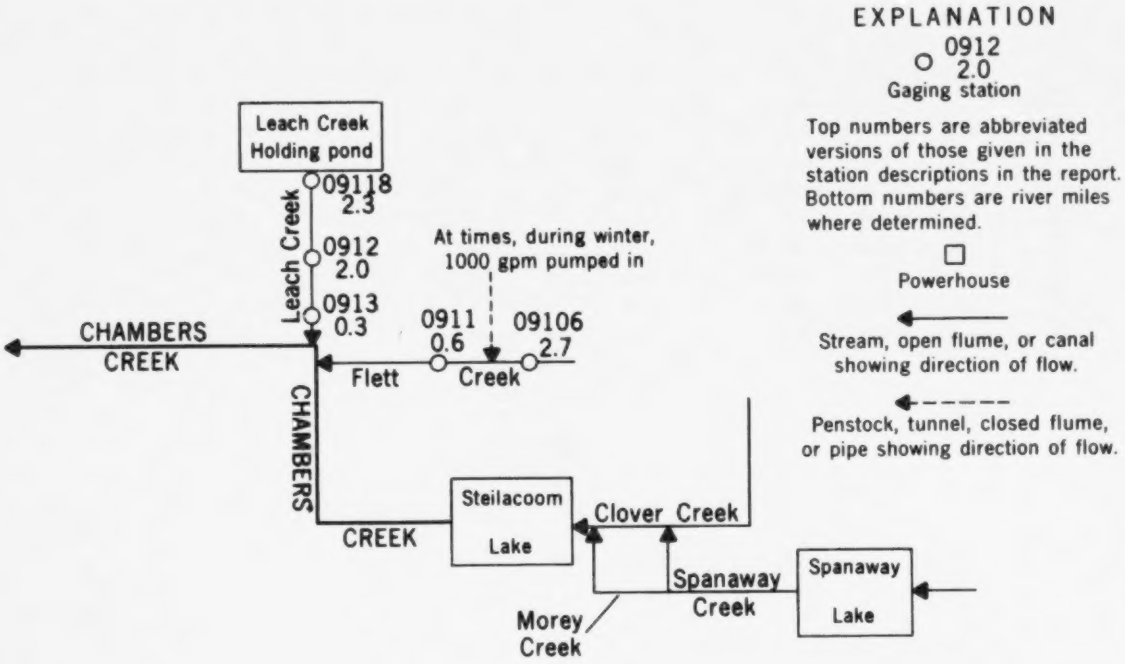
DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
OCT , 1977												
06...	0850	2260	68	6.8	11.5	40	34	10.3	22	0	6.1	1.7
NOV												
16...	0915	3520	62	7.1	7.7	70	20	11.8	21	4	5.7	1.7
DEC												
07...	0905	9440	56	7.0	5.9	35	110	12.3	16	1	4.4	1.2
JAN , 1978												
05...	0900	3090	63	7.4	6.0	65	20	12.0	23	1	5.9	1.9
FEB												
16...	0915	2960	63	7.0	5.0	30	4	12.5	23	1	6.4	1.8
MAR												
22...	0800	1060	85	7.1	8.5	25	5	10.6	31	1	8.0	2.7
APR												
19...	0810	1470	82	7.0	9.2	65	6	10.6	25	0	6.5	2.1
MAY												
10...	0900	970	82	7.0	10.2	--	--	10.7	29	0	7.1	2.7
JUN												
14...	0915	1220	74	7.5	11.1	--	2	10.7	25	0	6.8	2.0
JUL												
26...	0815	1040	65	7.3	15.3	15	2	9.1	24	0	6.2	2.0
AUG												
16...	0850	1000	66	7.4	13.2	10	1	9.9	25	0	6.6	2.0
SEP												
07...	0850	1160	65	7.1	12.9	20	4	10.2	24	0	6.4	1.9

DATE	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1977												
06...	3.3	24	.3	.7	29	0	24	7.4	4.2	1.9	.06	.17
NOV												
16...	3.2	24	.3	.7	21	0	17	2.7	4.2	2.4	.20	.08
DEC												
07...	2.5	25	.3	.6	18	0	15	2.9	3.6	2.0	.26	.11
JAN , 1978												
05...	3.1	22	.3	.8	26	0	21	1.7	4.3	2.5	.72	.12
FEB												
16...	3.2	22	.3	.6	27	0	22	4.3	4.1	2.5	.31	.05
MAR												
22...	4.9	24	.4	2.2	36	0	30	4.6	6.1	2.9	.37	.03
APR												
19...	3.5	23	.3	.8	31	0	25	5.0	4.0	2.4	.32	.08
MAY												
10...	4.0	23	.3	.8	35	0	29	5.6	3.4	3.2	.26	.04
JUN												
14...	3.4	22	.3	.7	33	0	27	1.7	5.2	2.4	.12	.05
JUL												
26...	3.5	24	.3	.7	32	0	26	2.6	2.3	2.1	.08	.02
AUG												
16...	3.8	24	.3	.7	33	0	27	2.1	3.2	2.0	.07	.03
SEP												
07...	3.6	24	.3	.7	30	0	25	3.8	4.0	2.0	.08	.08

12090240 NISQUALLY RIVER AT NISQUALLY, WA--Continued

WATER QUALITY DATA

DATE	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	ARSENIC DISSOLVED (UG/L AS AS)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1977												
06...	.06	.00	.00	0	0	4	2	0	.0	0	0	10
NOV												
16...	.07	.01	.03	3	0	0	1	10	.0	0	0	0
DEC												
07...	.24	.02	.06	0	2	0	3	9	.0	0	0	10
JAN , 1978												
05...	.06	.02	.06	1	0	0	1	3	.0	0	0	0
FEB												
16...	.02	.01	.03	1	1	0	1	5	.0	10	0	10
MAR												
22...	.06	.00	.00	3	0	0	5	5	.0	0	0	10
APR												
19...	.04	.01	.03	0	0	0	0	2	.0	0	0	0
MAY												
10...	.02	.01	.03	0	1	5	1	3	.0	0	0	0
JUN												
14...	.02	.00	.00	2	1	0	2	5	.2	0	0	0
JUL												
26...	.01	.01	.03	0	<1	0	1	9	.0	0	0	<3
AUG												
16...	.01	.01	.03	4	0	0	0	1	.0	0	0	0
SEP												
07...	.03	.01	.03	1	<1	0	3	9	.0	0	0	4


EXPLANATION
0912
2.0
Gaging station
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Leach Creek Holding pond
09118
2.3
0912
2.0
0913
0.3
Leach Creek
At times, during winter, 1000 gpm pumped in
0911
0.6
09106
2.7
Flett
Creek
CHAMBERS CREEK
CHAMBERS
CREEK
Steilacoom Lake
Clover Creek
Spanaway Creek
Spanaway Lake
Morey Creek

Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.

Figure 10. Gaging stations in Chambers Creek basin.

12091060 FLETT CREEK AT MOUNTAIN VIEW MEMORIAL PARK, AT TACOMA, WA

LOCATION.--Lat 47°11'06", long 122°29'17", in NW¼NE¼ sec.36, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 0.4 mi (0.6 km) downstream from 74th Street crossing in Tacoma and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--5.91 mi² (15.31 km²), excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder and metal V-notch control. Altitude of gage is 235 ft (71.6 m), from topographic map.

REMARKS.--Records fair. No regulation. Storm sewer drainage above station. Several diversions for irrigation and industrial use above station.

AVERAGE DISCHARGE.--11 years, 4.23 ft³/s (0.120 m³/s), 3,060 acre-ft/yr (3.77 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103 ft³/s (2.92 m³/s) Mar. 5, 1972, gage height, 3.53 ft (1.076 m); maximum gage height, 3.73 ft (1.137 m) Jan. 18, 1972, backwater from road construction; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38 ft³/s (1.08 m³/s) Dec. 13, 15; maximum gage height, 2.76 ft (0.841 m) Dec. 15; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	3.7	7.0	4.2	9.8	4.5	.00	3.0	.12	.00	.00	.00
2	.00	6.4	13	3.3	16	3.5	.14	2.2	.01	.00	.00	.00
3	.00	6.7	14	7.8	18	2.8	.09	1.6	.00	.00	.00	.00
4	.00	7.8	12	12	15	3.0	.98	1.1	.00	.00	.00	.00
5	.00	2.8	9.4	13	11	3.3	1.1	.70	.00	.00	.00	.00
6	.00	.49	13	11	12	3.0	.18	.49	.00	.00	.00	.00
7	.00	.04	16	11	12	7.4	.06	.34	.00	.00	.00	.10
8	.00	.00	12	17	10	8.1	.05	.20	.00	.00	.00	1.0
9	.00	.00	7.0	20	8.5	7.0	.01	.12	.01	.00	.00	1.6
10	.00	.06	16	18	6.7	5.1	.00	.55	.00	.00	.00	1.9
11	.00	.12	22	14	5.4	3.7	.00	.98	.00	.00	.00	1.7
12	.00	.34	26	13	4.5	3.0	.00	1.6	1.2	.00	.00	1.6
13	.00	1.1	29	15	3.7	2.8	.02	3.3	2.1	.00	.00	1.5
14	.00	4.5	29	16	4.5	2.2	.15	4.2	4.0	.00	.00	.49
15	.00	5.1	31	16	4.0	1.7	.23	4.0	3.7	.00	.00	.08
16	.00	3.5	25	13	4.0	1.5	3.3	3.5	3.0	.00	.00	.00
17	.00	1.5	25	10	3.3	.79	1.7	2.6	1.9	.00	.00	.00
18	.00	.44	24	7.8	2.8	.10	2.6	1.6	1.1	.00	.00	.00
19	.00	.00	23	7.0	2.2	.04	5.4	.88	.44	.00	.00	.00
20	.00	.00	22	6.7	2.1	.01	6.4	.49	.18	.00	.00	.00
21	.00	.00	21	15	1.7	.00	12	.23	.02	.00	.00	.00
22	.00	.00	19	19	1.5	.00	20	.09	.00	.00	.00	1.6
23	.00	.04	11	17	1.3	1.3	19	.02	.00	.00	.00	12
24	.00	.01	7.4	12	1.6	.62	15	.01	.00	.00	.00	14
25	.00	7.4	5.1	9.4	6.4	2.1	12	.01	.00	.00	.00	8.5
26	.00	14	3.7	8.5	7.8	.20	7.8	.03	.00	.00	.00	4.2
27	.00	13	3.0	7.0	7.8	.04	8.5	.79	.00	.00	.00	2.2
28	.00	9.4	2.4	6.7	6.0	.62	7.4	.39	.00	.00	.00	1.7
29	.00	9.4	4.8	6.4	---	.07	5.7	1.1	.00	.00	.00	.70
30	.00	7.8	5.7	6.0	---	.01	4.2	.55	.00	.00	.00	.79
31	.00	---	5.4	5.7	---	.00	---	.34	---	.00	.00	---
TOTAL	.06	105.64	463.9	348.5	189.6	68.50	134.01	37.01	17.78	.00	.00	55.66
MEAN	.002	3.52	15.0	11.2	6.77	2.21	4.47	1.19	.59	.000	.000	1.86
MAX	.06	14	31	20	18	8.1	20	4.2	4.0	.00	.00	14
MIN	.00	.00	2.4	3.3	1.3	.00	.00	.01	.00	.00	.00	.00
CFSM	.000	.60	2.54	1.90	1.15	.37	.76	.20	.10	.000	.000	.32
IN.	.00	.66	2.92	2.19	1.19	.43	.84	.23	.11	.00	.00	.35
AC-FT	.1	210	920	691	376	136	266	73	35	.00	.00	110

CAL YR 1977 TOTAL 787.49 MEAN 2.16 MAX 31 MIN .00 CFSM .37 IN 4.96 AC-FT 1560
WTR YR 1978 TOTAL 1420.66 MEAN 3.89 MAX 31 MIN .00 CFSM .66 IN 8.94 AC-FT 2820

Note.--No gage-height record July 10 to Sept. 12.

12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE¼SW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at 75th Street, 0.6 mi (1.0 km) upstream from mouth and 0.7 mi (1.1 km) west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi² (18.98 km²) excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to current year. Chemical analyses October 1964 to September 1965.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 200 ft (61 m), from topographic map.

REMARKS.--Records fair. Storm sewer drainage above station. Several diversions for irrigation and industrial use. At times, during winter months, 1,000 gpm (0.063 m³/s) is pumped into creek for short intervals from Mountain View Memorial Park.

AVERAGE DISCHARGE.--19 years, 8.66 ft³/s (0.245 m³/s), 6,270 acre-ft/yr (7.73 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s (3.74 m³/s) Mar. 5, 1972, gage height, 2.97 ft (0.905 m), from rating curve extended above 45 ft³/s (1.27 m³/s) on basis of computation of peak flow over weir at gage height 2.82 ft (0.860 m); minimum, 0.29 ft³/s (0.008 m³/s) Aug. 27, 1967; minimum gage height, 1.30 ft (0.396 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67 ft³/s (1.90 m³/s) Dec. 14, gage height, 2.74 ft (0.835 m); minimum discharge, 0.45 ft³/s (0.013 m³/s) Oct. 11, 12, gage height, 1.38 ft (0.421 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	5.1	12	17	19	13	9.2	22	6.3	2.5	3.8	3.4
2	1.9	7.5	18	15	23	12	10	18	5.9	3.0	3.8	3.9
3	1.8	7.5	20	22	26	11	10	17	5.6	2.7	3.7	3.4
4	1.5	8.2	19	26	24	12	11	15	5.4	2.5	3.7	3.8
5	.95	6.6	13	29	20	13	12	14	5.3	2.7	3.5	3.5
6	.95	3.5	17	27	22	12	11	13	5.1	2.5	3.7	3.5
7	.70	2.7	20	27	22	18	9.6	11	5.0	2.5	3.7	3.3
8	.54	2.3	21	34	20	17	9.6	8.8	4.8	2.4	3.5	3.5
9	.49	2.7	17	38	19	16	9.4	7.5	5.9	2.5	3.4	4.4
10	.49	3.3	20	39	17	14	9.4	7.3	5.3	2.5	3.3	4.7
11	.45	2.7	42	31	16	12	9.6	8.3	5.3	2.5	3.0	4.2
12	.59	2.2	49	27	14	12	9.6	7.9	7.0	2.4	3.3	4.1
13	.59	2.9	57	26	13	11	10	10	9.0	2.4	3.3	4.4
14	.59	6.5	57	29	17	11	11	11	11	2.3	3.3	4.4
15	.59	7.2	51	29	15	10	11	11	12	2.3	3.3	4.1
16	.64	6.6	45	27	14	9.6	16	10	11	3.0	3.1	3.8
17	.59	4.4	42	24	13	9.2	13	9.0	9.4	2.8	3.0	3.8
18	.64	3.2	42	21	13	8.5	14	8.1	7.5	2.5	2.9	3.5
19	.70	2.2	40	21	12	8.5	17	7.5	6.6	2.5	2.9	3.4
20	.76	1.8	39	20	12	8.8	18	7.2	5.7	2.7	3.0	3.5
21	.82	1.7	38	28	11	8.5	18	7.0	5.1	2.5	3.1	3.5
22	1.1	1.8	37	29	11	8.5	32	6.6	4.5	2.4	3.1	4.8
23	2.0	2.9	32	29	10	10	36	6.4	4.2	2.4	3.3	7.9
24	1.9	3.0	25	24	12	10	32	6.4	4.1	2.3	3.4	14
25	1.8	8.3	21	21	15	12	26	6.4	3.9	2.0	2.9	15
26	1.5	14	18	19	16	10	22	6.6	3.9	3.8	2.9	14
27	1.0	19	16	17	16	9.4	24	7.5	3.4	4.5	2.7	10
28	1.4	16	15	17	14	10	24	7.0	3.1	4.1	2.7	7.9
29	2.2	16	18	17	---	9.6	26	7.0	2.7	3.9	2.5	6.3
30	2.5	13	19	15	---	9.0	22	6.8	2.7	3.9	2.5	5.3
31	2.0	---	18	15	---	9.0	---	6.4	---	3.9	2.9	---
TOTAL	35.98	184.8	898	760	456	344.6	492.4	297.7	176.7	86.9	99.2	165.3
MEAN	1.16	6.16	29.0	24.5	16.3	11.1	16.4	9.60	5.89	2.80	3.20	5.51
MAX	2.5	19	57	39	26	18	36	22	12	4.5	3.8	15
MIN	.45	1.7	12	15	10	8.5	9.2	6.4	2.7	2.0	2.5	3.3
AC-FT	71	367	1780	1510	904	684	977	590	350	172	197	328

CAL YR 1977 TOTAL 1942.60 MEAN 5.32 MAX 57 MIN .45 AC-FT 3850
WTR YR 1978 TOTAL 3997.58 MEAN 11.0 MAX 57 MIN .45 AC-FT 7930

12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA

LOCATION.--Lat 47°13'29", long 122°30'32", in NE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at holding pond dam, 0.8 mi (1.3 km) south of Fircrest, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--4.59 mi^2 (11.89 km^2), includes 0.68 mi^2 (1.76 km^2) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--July 1967 to current year.

REVISED RECORDS.--WDR WA-77-1: 1975(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 200 ft (61 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Records good. Drainage into upper end of basin influenced by urbanizing of area. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No known diversion above station.

AVERAGE DISCHARGE.--11 years, 3.88 ft^3/s (0.110 m^3/s), 2,810 acre-ft/yr (3.46 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 114 ft^3/s (3.23 m^3/s) Mar. 5, 1972, gage height, 11.95 ft (3.642 m), from rating curve extended above 45 ft^3/s (1.27 m^3/s); minimum, 0.34 ft^3/s (0.010 m^3/s) Mar. 1, 2, 1969, gage height, 7.63 ft (2.32o m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53 ft^3/s (1.50 m^3/s) Dec. 10, gage height, 10.22 ft (3.115 m), minimum, 1.4 ft^3/s (0.040 m^3/s) on part of many days during May, June, July and August; minimum gage height, 7.69 ft (2.344 m) June 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	19	8.4	1.8	6.1	2.2	3.1	2.3	1.7	1.7	1.7	8.1
2	1.5	9.7	13	2.2	11	2.0	7.5	2.2	1.6	13	1.7	15
3	1.5	2.2	2.9	13	11	2.9	2.7	2.2	1.5	1.9	1.7	3.5
4	1.5	2.2	2.0	13	9.8	2.4	6.6	2.2	1.5	1.7	1.6	4.8
5	1.5	2.2	3.9	6.9	8.7	2.1	5.4	2.1	1.7	1.7	1.7	2.9
6	3.8	2.1	14	2.7	7.9	2.6	2.3	2.1	1.6	1.7	1.6	3.5
7	2.1	2.0	2.4	6.5	11	15	2.1	1.8	1.7	1.8	1.8	1.9
8	1.8	1.9	1.9	14	5.8	2.8	2.0	1.9	1.8	1.6	1.9	6.2
9	1.7	5.8	2.7	14	3.8	2.2	1.9	2.0	11	1.5	1.8	12
10	1.7	7.4	20	10	2.3	2.2	2.0	5.4	1.9	1.9	1.9	5.5
11	1.7	5.4	30	3.8	2.1	2.6	2.0	5.1	1.8	1.8	2.0	2.1
12	3.4	4.0	23	4.6	1.9	2.1	2.1	4.4	6.1	1.8	3.4	1.9
13	2.3	3.8	26	5.8	2.0	3.8	4.0	8.4	3.7	1.8	1.6	3.4
14	1.9	15	26	9.3	7.2	2.1	4.7	6.1	2.0	1.7	2.0	1.9
15	1.8	6.1	25	3.9	2.6	2.0	6.1	3.8	1.8	1.6	2.4	1.8
16	2.0	5.5	13	3.9	2.0	2.0	13	1.9	1.7	7.8	1.8	2.2
17	2.1	2.4	7.3	2.8	2.0	2.0	3.3	1.8	1.5	2.0	1.8	3.5
18	2.1	3.1	4.7	2.3	2.0	1.9	7.6	1.8	1.5	1.8	1.9	1.8
19	1.9	2.4	3.1	4.0	1.8	1.9	14	1.7	1.6	1.7	1.8	1.7
20	1.9	2.3	2.7	3.8	1.6	2.0	5.8	1.5	1.6	1.8	1.5	5.2
21	2.8	2.4	2.6	9.7	1.8	2.1	9.2	1.6	1.6	1.8	1.7	2.6
22	1.9	2.6	2.4	11	1.8	2.1	7.5	1.8	1.7	1.8	1.7	19
23	4.5	9.4	2.2	6.3	2.0	9.3	2.6	1.7	1.6	1.7	3.5	40
24	10	3.6	2.0	2.3	4.4	5.0	2.2	2.3	1.5	1.8	6.9	7.9
25	8.5	23	2.0	2.8	16	9.8	2.2	1.8	1.5	1.9	3.9	2.2
26	2.8	14	1.9	2.3	3.4	2.3	3.5	6.0	1.8	14	2.0	2.0
27	2.2	3.0	1.9	2.0	2.3	2.1	8.9	5.3	2.0	11	1.6	2.0
28	4.8	6.2	2.9	3.4	2.1	6.0	2.3	1.8	1.9	1.8	2.2	3.8
29	9.0	7.5	7.6	3.0	---	2.3	2.1	1.8	2.0	1.6	1.8	1.9
30	8.6	2.2	5.8	2.0	---	2.1	2.0	1.8	1.9	1.6	1.9	3.2
31	2.5	---	1.9	2.7	---	2.3	---	1.9	---	1.6	6.7	---
TOTAL	97.3	178.4	265.2	177.8	136.4	104.2	140.7	88.5	66.8	92.9	71.5	173.5
MEAN	3.14	5.95	8.55	5.74	4.87	3.36	4.69	2.85	2.23	3.00	2.31	5.78
MAX	10	23	30	14	16	15	14	8.4	11	14	6.9	40
MIN	1.5	1.9	1.9	1.8	1.6	1.9	1.9	1.5	1.5	1.5	1.5	1.7
AC-FT	193	354	526	353	271	207	279	176	132	184	142	344

WTR YR 1978 TOTAL 1593.2 MEAN 4.36 MAX 40 MIN 1.5 AC-FT 3160

CAL YR 1977 TOTAL 1372.1 MEAN 3.76 MAX 30 MIN 1.3 AC-FT 2720

12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 1.0 mi (1.6 km) south of Fircrest and 2 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--4.73 mi² (12.25 km²) includes 0.68 mi² (1.76 km²) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 190 ft (58 m), from topographic map.

REMARKS.--Records good. Since Oct. 1, 1961, flow may be regulated at dam above station for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. Drainage into upper end of basin influenced by urbanizing of area. No know diversion above station.

AVERAGE DISCHARGE.--21 years, 4.08 ft³/s (0.116 m³/s), 2,960 acre-ft/yr (3.65 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 198 ft³/s (5.61 m³/s) Feb. 28, 1972, gage height, 3.51 ft (1.070 m), from rating curve extended above 60 ft³/s (1.70 m³/s); minimum, 0.1 ft³/s (0.003 m³/s) Sept. 22, 1965, gage height, 1.02 ft (0.311 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 57 ft³/s (1.61 m³/s) Dec. 10, gage height, 1.99 ft (0.607 m); minimum daily, 1.6 ft³/s (0.045 m³/s) Oct. 2, 8, 9, 10, 11, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	22	9.6	2.0	7.2	2.4	3.7	2.5	2.2	2.0	2.1	8.9
2	1.6	12	15	2.3	12	2.3	8.4	2.5	2.2	14	2.1	18
3	1.7	2.1	2.8	14	11	2.2	3.2	2.3	2.1	2.1	2.0	4.2
4	1.7	2.1	1.8	13	11	2.9	7.2	2.3	2.2	2.0	1.9	5.8
5	1.7	2.1	3.9	7.2	9.6	2.5	6.3	2.2	2.3	2.0	2.2	3.5
6	4.1	2.1	16	2.9	8.8	2.4	2.7	2.2	2.3	2.0	2.1	4.2
7	2.0	2.0	2.3	9.2	11	17	2.5	2.1	2.3	2.2	2.3	2.3
8	1.6	1.7	1.7	14	6.3	3.2	2.3	2.2	2.3	1.9	2.2	7.0
9	1.6	6.4	2.4	14	4.2	2.5	2.3	2.3	12	1.8	2.4	14
10	1.6	8.8	22	11	2.7	2.5	2.5	5.4	2.3	2.4	2.5	7.0
11	1.6	5.8	37	4.2	2.3	2.9	2.5	5.7	2.3	2.2	3.0	2.5
12	3.6	4.4	26	4.8	2.3	2.3	2.5	4.5	6.6	2.2	4.0	2.3
13	2.3	3.9	30	6.0	2.2	3.9	4.8	8.8	4.2	2.1	2.0	4.2
14	1.7	19	30	10	5.4	2.3	5.7	6.6	2.5	2.0	2.5	2.4
15	1.6	6.7	28	4.5	2.9	2.3	6.9	4.2	2.2	1.9	2.9	2.3
16	2.0	6.4	13	4.2	2.3	2.3	14	2.2	2.2	9.0	2.2	2.8
17	2.0	2.1	7.2	3.2	2.3	2.3	3.9	2.2	2.1	2.5	2.2	4.6
18	1.8	2.7	4.8	2.5	2.5	2.2	8.0	2.2	2.1	2.2	2.3	2.3
19	1.7	1.8	3.2	4.2	2.1	2.2	15	2.1	2.1	2.1	2.0	2.2
20	1.7	1.7	2.5	4.2	1.9	2.3	6.9	2.1	2.1	2.2	1.9	6.4
21	3.2	1.7	2.3	11	2.0	2.3	10	2.1	2.1	2.2	2.1	3.5
22	1.7	1.8	2.3	11	2.0	2.3	8.4	2.2	2.2	2.1	2.3	23
23	4.9	10	2.2	6.6	2.2	9.2	3.2	2.2	2.1	2.2	5.0	47
24	11	4.0	2.1	2.5	6.0	5.4	2.9	2.7	2.1	2.3	8.4	9.6
25	9.2	26	2.0	2.9	16	9.6	2.7	2.3	2.0	2.4	3.8	2.7
26	2.5	15	2.0	2.5	4.0	2.7	4.2	6.3	2.1	16	2.4	2.3
27	1.8	3.4	2.0	2.2	2.5	2.5	9.6	6.0	2.1	12	2.0	2.3
28	4.9	6.4	2.9	3.7	2.4	6.3	2.9	2.3	2.1	2.2	2.7	4.5
29	10	7.8	7.2	3.4	---	2.7	2.3	2.3	2.1	2.0	2.1	2.2
30	9.6	1.8	5.7	2.7	---	2.5	2.3	2.3	2.0	1.9	2.2	3.9
31	2.3	---	2.1	2.9	---	2.7	---	2.3	---	1.9	7.8	---
TOTAL	100.4	193.7	292.0	188.3	147.1	113.1	159.8	99.6	81.5	108.0	87.6	207.7
MEAN	3.24	6.46	9.42	6.07	5.25	3.65	5.33	3.21	2.72	3.48	2.83	6.92
MAX	11	26	37	14	16	17	15	8.8	12	16	8.4	47
MIN	1.6	1.7	1.7	2.0	1.9	2.2	2.3	2.1	2.0	1.8	1.9	2.2
CFSM	.69	1.37	1.99	1.28	1.11	.77	1.13	.68	.58	.74	.60	1.46
IN.	.79	1.52	2.30	1.48	1.16	.89	1.26	.78	.64	.85	.69	1.63
AC-FT	199	384	579	373	292	224	317	198	162	214	174	412

WTR YR 1978 TOTAL 1778.8 MEAN 4.87 MAX 47 MIN 1.6 CFSM 1.03 IN 13.99 AC-FT 3530
CAL YR 1977 TOTAL 1449.3 MEAN 3.97 MAX 37 MIN 1.3 CFSM .84 IN 11.40 AC-FT 2870

NOTE.--No gage-height record July 7 -Aug. 28.

12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW¼NW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 0.3 mi (0.5 km) upstream from mouth and 4.1 mi (6.6 km) northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi² (16.99 km²), includes 0.68 mi² (1.76 km²), storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi² (15.23 km²).

PERIOD OF RECORD.--February 1957 to current year. Chemical analyses water years 1963-65, 1976.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 140 ft (43 m), from topographic map. Prior to June 27, 1973, water-stage recorder at site 150 ft (46 m) upstream at different datum. Supplementary water-stage recorder at site 50 ft (15 m) downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973 to Mar. 14, 1975, nonrecording gage at site 350 ft (107 m) upstream at different datum.

REMARKS.--Records fair. Drainage into upper end of basin influenced by urbanizing of area. Some pumping for community use above gage. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin.

AVERAGE DISCHARGE.--21 years, 9.78 ft³/s (0.277 m³/s), 7,090 acre-ft/yr (8.74 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 238 ft³/s (6.74 m³/s) Mar. 5, 1972, gage height, 6.88 ft (2.097 m), from high-water mark in well, from rating curve extended above 60 ft³/s (1.70 m³/s), site and datum then in use; maximum gage height, 10.91 ft (3.325 m) Feb. 28, 1972, backwater from partially plugged culvert, site and datum then in use; minimum discharge, 2.0 ft³/s (0.057 m³/s) July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 99 ft³/s (2.80 m³/s) Dec. 10, gage height, 2.00 ft (0.610 m) high-water mark in well; minimum, 4.8 ft³/s (0.14 m³/s) on all or part of each day Oct. 11, 12, 15-21, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	27	12	7.1	12	9.4	9.0	6.9	5.9	5.7	6.5	9.0
2	5.3	19	23	7.1	25	8.8	15	6.7	5.9	14	6.5	20
3	5.3	6.5	8.8	20	22	11	9.0	6.6	5.9	6.8	6.5	5.9
4	5.3	6.2	8.0	20	20	10	13	6.6	5.9	6.2	6.2	8.2
5	5.3	6.2	7.6	14	18	8.6	12	6.5	5.9	6.2	6.5	6.2
6	7.2	5.9	26	13	15	11	7.0	6.4	5.9	6.2	6.2	6.5
7	5.9	5.9	10	14	23	35	6.6	6.3	5.9	6.2	6.2	5.3
8	5.3	5.6	8.4	21	15	8.6	6.4	6.5	5.9	6.2	6.5	6.8
9	5.0	8.0	8.4	19	11	7.1	6.2	6.7	15	5.9	6.5	19
10	5.0	12	29	14	9.5	7.1	6.4	13	5.5	6.2	6.5	9.8
11	5.0	8.0	39	9.4	9.0	7.1	6.4	12	5.5	6.2	6.5	5.9
12	5.6	9.2	27	9.8	8.5	7.1	6.8	7.8	11	6.2	8.2	5.6
13	7.2	8.8	36	11	8.4	8.2	10	14	9.4	5.9	6.5	6.8
14	5.0	24	36	16	14	6.5	12	12	6.8	5.9	6.8	5.9
15	5.0	11	32	10	10	6.5	18	9.0	6.2	5.9	7.4	5.6
16	5.0	12	21	9.4	8.8	6.5	30	6.5	5.9	11	6.5	5.6
17	5.0	8.4	17	8.2	8.8	6.5	10	6.2	5.7	6.5	6.5	6.8
18	5.0	8.4	11	7.4	8.6	6.5	16	6.2	5.7	6.2	6.5	5.6
19	5.0	7.6	9.2	9.4	8.3	6.5	29	6.2	5.7	6.2	6.8	5.3
20	4.8	6.8	7.6	9.0	8.0	6.5	18	5.9	5.7	5.9	6.5	7.1
21	5.9	6.8	7.1	19	8.1	6.5	22	5.7	5.7	5.9	6.5	7.8
22	5.0	6.8	7.1	16	8.2	6.5	15	5.9	6.2	5.9	6.5	21
23	8.0	10	6.8	12	9.0	14	7.3	5.9	6.5	5.9	7.8	73
24	10	14	6.5	7.4	13	10	7.0	6.5	6.2	6.2	14	19
25	14	34	6.5	7.8	40	16	6.6	5.9	5.9	6.2	8.2	6.8
26	7.2	28	6.5	7.4	12	9.4	11	8.6	5.7	16	8.6	6.2
27	5.6	8.0	6.5	7.1	10	7.8	19	12	5.7	25	6.2	6.2
28	7.2	8.4	6.8	8.6	9.7	12	7.0	6.5	5.7	7.4	6.5	7.8
29	14	17	14	8.2	---	7.8	6.5	6.8	5.7	6.5	6.2	6.2
30	14	6.5	14	6.8	---	7.1	6.4	6.2	5.7	6.5	6.2	7.1
31	6.8	---	7.4	6.8	---	7.1	---	6.2	---	6.2	9.0	---
TOTAL	205.2	346.0	466.2	357.9	372.9	289.7	354.6	234.2	194.3	233.2	218.0	318.0
MEAN	6.62	11.5	15.0	11.5	13.3	9.35	11.8	7.55	6.48	7.52	7.03	10.6
MAX	14	34	39	21	40	35	30	14	15	25	14	73
MIN	4.8	5.6	6.5	6.8	8.0	6.5	6.2	5.7	5.5	5.7	6.2	5.3
AC-FT	407	686	925	710	740	575	703	465	385	463	432	631

WTR YR 1978 TOTAL 3590.2 MEAN 9.84 MAX 73 MIN 4.8 AC-FT 7120

CAL YR 1977 TOTAL 3225.6 MEAN 8.84 MAX 39 MIN 4.4 AC-FT 6400

NOTE.--No gage-height record Feb. 2-Mar. 7, Apr. 1-May 10.

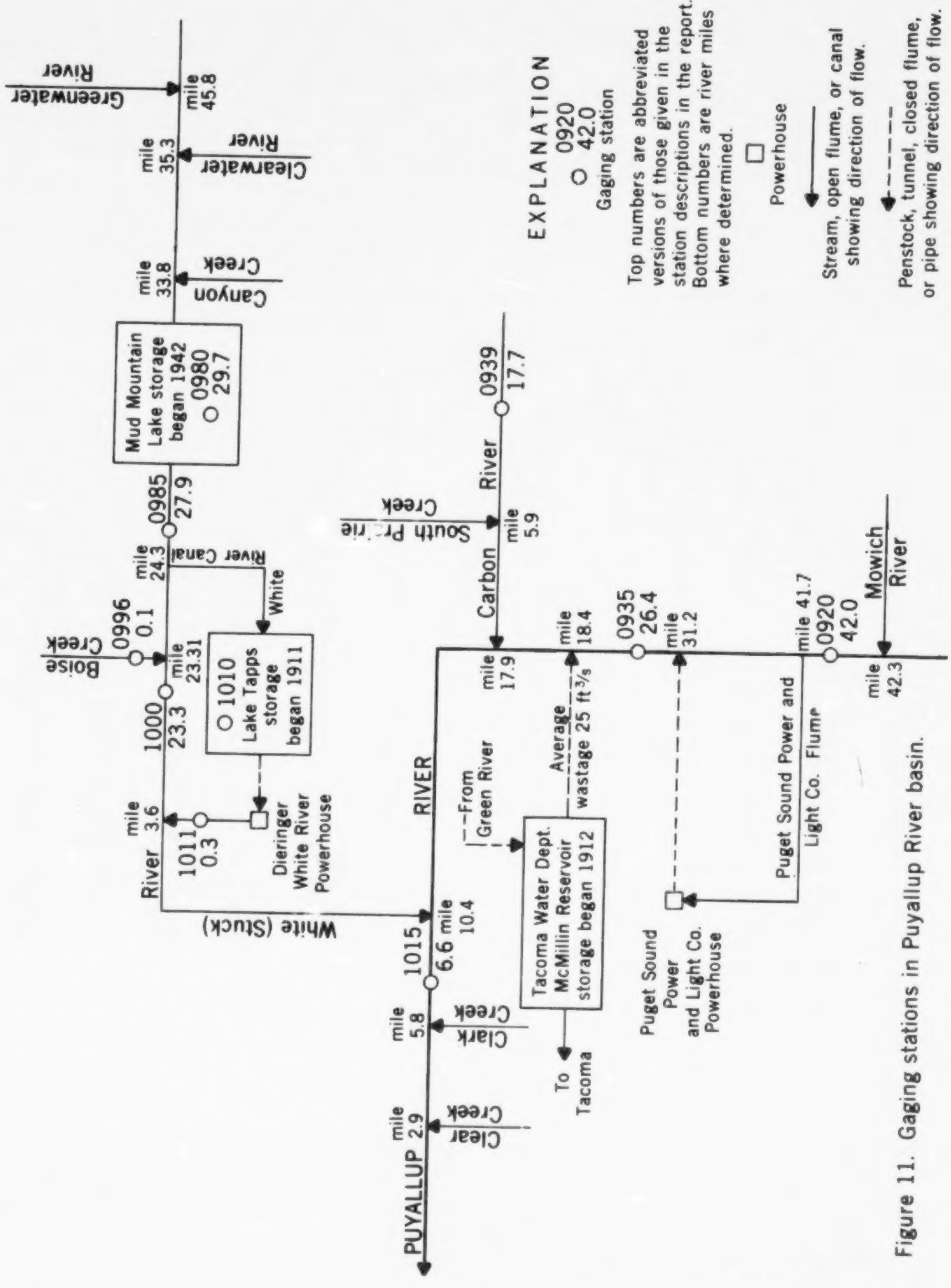

Greenwater River
mile 45.8
Clearwater River
mile 35.3
Canyon Creek
mile 33.8
Mud Mountain Lake storage began 1942
0980
29.7
0985
27.9
mile 24.3
White River Canal
0996
0.1
Boise Creek
mile 23.31
1000
23.3
1010
Lake Tapps storage began 1911
mile 3.6
1011
0.3
Dieringer White River Powerhouse
White (Stuck) River
1015
6.6
mile 10.4
mile 5.8
Clark Creek
mile 2.9
Clear Creek
PUYALLUP RIVER
Tacoma Water Dept. McMillin Reservoir storage began 1912
From Green River
To Tacoma
Average wastage 25 ft³/s
Carbon River
South Prairie Creek
mile 5.9
0939
17.7
mile 17.9
mile 18.4
0935
26.4
mile 31.2
mile 41.7
0920
42.0
mile 42.3
Mowich River
Puget Sound Power and Light Co. Flume
Puget Sound Power and Light Co. Powerhouse
EXPLANATION
0920
42.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 11. Gaging stations in Puyallup River basin.

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE¼NW¼ sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1,000 ft (305 m) upstream from Puget Sound Power & Light Co.'s flume headworks, 0.3 mi (0.5 km) downstream from Mowich River, 9.8 mi (15.8 km) southeast of Electron, and at mile 42.0 (67.6 km).

DRAINAGE AREA.--92.8 mi² (240.4 km²).

PERIOD OF RECORD.--October 1908 to September 1926, October 1926 to September 1933 (monthly discharge only, published in State of Washington Water-Supply Bulletin No. 6), October 1944 to September 1949, and October 1957 to current year.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,640 ft (500 m), from river-profile map. Prior to Jan. 1, 1913, nonrecording gage and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30, 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites within 125 ft (38 m) upstream at different datums.

REMARKS.--Records good except those for discharges during period of shifting control December 2 to January 8, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--51 years, (1908-33, 1944-49, 1957-78) 531 ft³/s (15.04 m³/s), 77.70 in/yr (1,974 mm/yr), 384,700 acre-ft/yr (474 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Nov. 22, 1959, gage height, 11.9 ft (3.63 m) from flood marks, site and datum then in use, result of slope-area measurement; minimum daily discharge, 100 ft³/s (2.83 m³/s) Dec. 13, 14, 1972 during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65.1 m³/s), after Dec. 1, from rating extended above 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2115	2,330	66.0	3.65	1.113
Nov. 25	2015	3,450	97.7	4.35	1.326
Dec. 2	1145	*9,460	268	*7.47	2.277
Dec. 11	0100	2,520	71.4	5.09	1.551
Dec. 13	1600	3,710	105	5.70	1.737

Minimum discharge, 153 ft³/s (4.33 m³/s) Oct. 22, 23, gage height, 1.09 ft (0.332 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	294	932	3560	332	245	226	323	400	427	671	484	587
2	274	1200	6610	328	294	223	294	370	520	587	544	580
3	254	664	1770	416	337	229	266	350	678	544	657	587
4	239	480	1290	580	323	252	259	328	808	562	752	502
5	224	385	1200	685	365	232	256	294	952	629	629	526
6	220	372	1580	601	502	226	232	278	889	678	562	490
7	243	520	1520	556	508	342	226	266	744	706	587	385
8	220	371	1280	864	478	405	223	278	671	671	671	355
9	209	450	1110	872	405	337	217	328	768	580	685	636
10	198	1190	1410	752	350	294	217	395	678	454	508	678
11	195	846	2290	615	319	274	238	427	594	427	427	432
12	191	650	1940	556	286	259	223	375	562	438	478	350
13	216	620	2520	526	274	249	217	544	608	532	365	328
14	198	876	2060	643	256	235	214	1130	526	568	337	290
15	209	908	1550	594	249	226	211	880	514	643	997	310
16	216	748	1210	520	235	223	252	720	460	848	580	274
17	195	566	856	484	229	223	245	580	432	692	400	290
18	188	470	752	427	229	223	319	490	502	574	341	256
19	181	390	601	395	249	223	390	502	514	574	370	242
20	167	336	532	341	245	223	375	608	544	574	310	232
21	160	302	496	355	245	226	350	643	562	643	310	235
22	157	294	460	346	245	242	332	502	502	720	360	302
23	228	282	438	302	249	286	314	410	432	744	310	720
24	286	290	427	286	256	310	319	375	427	650	550	594
25	349	1860	410	278	278	337	380	341	544	657	421	526
26	294	2060	395	290	290	341	508	323	454	907	319	562
27	247	1210	375	263	256	319	685	438	526	848	282	526
28	235	1060	370	259	245	346	678	508	706	594	302	416
29	298	1680	385	266	---	365	550	432	728	526	350	375
30	421	1020	392	249	---	380	460	380	692	520	405	375
31	367	---	355	242	---	355	---	380	---	490	496	---
TOTAL	7373	23032	40144	14223	8442	8631	9773	14275	17964	19251	14789	12961
MEAN	238	768	1295	459	302	278	326	460	599	621	477	432
MAX	421	2060	6610	872	508	405	685	1130	952	907	997	720
MIN	157	282	355	242	229	223	211	266	427	427	282	232
CFSM	2.57	8.28	14.0	4.95	3.25	3.00	3.51	4.96	6.46	6.69	5.14	4.66
IN.	2.96	9.23	16.09	5.70	3.38	3.46	3.92	5.72	7.20	7.72	5.93	5.20
AC-FT	14620	45680	79630	28210	16740	17120	19380	28310	35630	38180	29330	25710

CAL YR 1977 TOTAL 189746 MEAN 520 MAX 6610 MIN 157 CFSM 5.60 IN 76.06 AC-FT 376400
WTR YR 1978 TOTAL 190858 MEAN 523 MAX 6610 MIN 157 CFSM 5.64 IN 76.51 AC-FT 378600

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW¼SW¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft (183 m) downstream from highway bridge, 4.0 mi (6.4 km) south of Orting, 8.5 mi (13.7 km) upstream from Carbon River, and at mile 26.4 (42.5 km).

DRAINAGE AREA.--172 mi² (445 km²).

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft (107.44 m) National Geodetic Vertical Datum of 1929. Prior to Feb. 6, 1946, at site 600 ft (183 m) upstream at datum 8.93 ft (2.722 m) higher. Supplementary water-stage recorder 200 ft (61 m) upstream at datum 7.1 ft (2.16 m) higher than present gage datum used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft (1.52 m) higher.

REMARKS.--Records good except those for periods of no gage-height record Oct. 25 to Nov. 14, Dec. 15-21, Sept. 24-30 and period of shifting control Dec. 2-13, which are fair. Up to 400 ft³/s (11.3 m³/s) diverted for Electron powerplant of Puget Sound Power & Light Co., which is returned to river 4.8 mi (7.7 km) above gage. Minor regulation by Electron powerplant.

AVERAGE DISCHARGE.--47 years, 713 ft³/s (20.19 m³/s) 56.29 in/yr (1,430 mm/yr), 516,600 acre-ft/yr (637 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s (433 m³/s) Nov. 20, 1962, gage height, 11.82 ft (3.603 m) present datum, from rating curve extended above 8,600 ft³/s (244 m³/s) on basis of slope-area measurement at gage height 12.25 ft (3.734 m) present datum; minimum discharge, 25 ft³/s (0.71 m³/s) Nov. 28, 1952; minimum daily, 59 ft³/s (1.67 m³/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 26	unknown	unknown		unknown	
Dec. 2	0100	*12,100	343	*10.62	3.237

Minimum daily discharge, 190 ft³/s (5.38 m³/s) Oct. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	400	900	4350	463	482	379	426	585	515	684	522	676
2	350	1500	9180	438	578	362	402	536	600	615	543	676
3	318	1000	3360	578	615	357	379	502	684	585	645	668
4	298	700	2460	804	578	426	362	476	772	585	740	630
5	290	550	1760	901	615	384	368	438	901	630	676	630
6	300	500	2140	838	764	362	340	408	865	652	600	622
7	300	700	2000	780	676	450	325	390	748	692	622	529
8	270	550	1400	1160	676	622	310	384	684	668	676	463
9	260	700	1200	1070	600	502	295	414	772	615	716	684
10	245	1700	1500	955	536	444	305	482	756	522	585	812
11	240	1100	2980	838	489	426	325	536	700	482	522	564
12	240	850	2590	796	450	414	305	529	622	463	550	469
13	250	800	2900	748	438	390	295	578	676	522	476	438
14	230	1000	2740	874	414	373	295	1080	615	571	402	396
15	230	1250	2000	829	402	351	290	1000	615	607	919	408
16	240	1150	1600	756	379	340	414	874	571	796	756	362
17	220	870	1300	708	362	340	456	748	522	708	522	402
18	200	690	1100	645	357	335	476	645	564	600	438	362
19	195	590	920	615	379	330	571	615	571	571	463	335
20	195	510	780	564	368	325	622	676	592	578	426	320
21	190	440	680	692	368	330	600	708	607	607	402	325
22	190	420	620	748	362	346	615	615	571	676	463	396
23	230	420	580	637	368	379	592	543	515	708	426	910
24	270	450	560	571	373	420	557	489	489	652	585	800
25	450	1450	540	550	420	426	578	469	578	622	543	660
26	370	2900	520	578	469	450	676	438	522	812	438	700
27	310	2100	500	529	414	420	883	515	543	838	373	640
28	280	1750	480	522	396	432	874	622	684	615	373	540
29	380	2300	550	515	---	469	756	550	724	550	414	460
30	520	1600	585	476	---	476	660	495	684	543	482	450
31	450	---	508	476	---	469	---	476	---	529	564	---
TOTAL	8911	31440	54383	21654	13328	12529	14352	17816	19262	19298	16862	16327
MEAN	287	1048	1754	699	476	404	478	575	642	623	544	544
MAX	520	2900	9180	1160	764	622	883	1080	901	838	919	910
MIN	190	420	480	438	357	325	290	384	489	463	373	320
CFSM	1.67	6.09	10.2	4.06	2.77	2.35	2.78	3.34	3.73	3.62	3.16	3.16
IN.	1.93	6.80	11.76	4.68	2.88	2.71	3.10	3.85	4.17	4.17	3.65	3.53
AC-FT	17670	62360	107900	42950	26440	24850	28470	35340	38210	38280	33450	32380

CAL YR 1977 TOTAL 247537 MEAN 678 MAX 9180 MIN 190 CFSM 3.94 IN 53.54 AC-FT 491000
WTR YR 1978 TOTAL 246162 MEAN 674 MAX 9180 MIN 190 CFSM 3.92 IN 53.24 AC-FT 488300

12093510 PUYALLUP RIVER AT ORTING, WA

LOCATION.--Lat 47°05'21", long 122°12'43" in SE¼NE¼ sec. 31, T.19 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on Calistoga Street bridge, 0.7 mi (1.1 km) south of Orting, upstream from Carbon River.

PERIOD OF RECORD.--Water years 1976 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
06...	1210	282	75	7.0	7.9	20	4
NOV							
16...	1215	1180	56	7.3	6.6	60	5
DEC							
07...	1150	2100	47	7.1	4.5	65	55
JAN , 1978							
05...	1140	847	58	7.5	5.5	40	6
FEB							
16...	1215	384	50	6.9	4.4	30	1
MAR							
15...	1010	346	75	6.7	5.5	20	3
APR							
19...	1140	600	75	7.5	8.8	40	8
MAY							
10...	1200	502	66	7.7	10.0	--	--
JUN							
14...	1240	578	55	7.5	11.0	--	6
JUL							
26...	1120	780	36	7.2	12.0	75	160
AUG							
16...	1200	764	45	7.4	9.6	70	900
SEP							
07...	1150	529	61	7.5	11.2	40	20

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
06...	11.9	.03	.04	.02	.00	.00
NOV						
16...	12.8	.25	.05	.03	.00	.00
DEC						
07...	13.2	.26	.10	.16	.01	.03
JAN , 1978						
05...	12.4	.23	.08	.04	.01	.03
FEB						
16...	13.3	.12	.04	.02	.00	.00
MAR						
15...	13.3	.08	.09	.01	.01	.03
APR						
19...	11.3	.09	.08	.08	.00	.00
MAY						
10...	11.6	.02	.03	.02	.01	.03
JUN						
14...	11.3	.02	.08	.02	.01	.03
JUL						
26...	10.0	.02	.10	.48	.01	.03
AUG						
16...	11.5	.04	.12	1.8	.02	.06
SEP						
07...	11.5	.05	.13	.06	.01	.03

12093900 CARBON RIVER AT FAIRFAX, WA

LOCATION.--Lat 47°00'47", long 122°00'42", in SW¼SW¼ sec.26, T.18 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank at Fairfax, 0.7 mi (1.1 km) downstream from Evans Creek, and at mile 17.7 (28.5 km).

DRAINAGE AREA.--76.2 mi^2 (197.4 km^2).

PERIOD OF RECORD.--November 1910 to July 1912, October 1965 to December 1977, January 1978 to May 1978 (no low-flow periods) discontinued.

GAGE.--Water-stage recorder. Altitude of gage is 1,330 ft (405 m), from topographic map. Nov. 23, 1910, to July 12, 1912, nonrecording gage at approximately same site at different datum.

REMARKS.--Records good. No record for period Jan. 19 to Apr. 25 as stage was below intake (discharge was less than 330 ft^3/s (9.3 m^3/s). No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1966-77) 436 ft^3/s (12.35 m^3/s), 77.70 in/yr (1,974 mm/yr), 315,900 acre-ft/yr (390 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 10,000 ft^3/s (283 m^3/s) Dec. 1, 1977, gage height, 6.43 ft (1.960 m) in gage well, 7.0 ft (2.13 m) from floodmarks; minimum, 73 ft^3/s (2.07 m^3/s) Nov. 4, 5, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges during period October 1977 to September 1978 above base of 1,800 ft^3/s (51.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 26	0200	3,550	101	4.76	1.451	Dec. 6	2000	1,830	51.8	2.71	0.826
Nov. 29	0900	2,900	82.1	4.43	1.350	Dec. 11	0400	1,840	52.1	2.72	0.829
Dec. 1	2100	*10,000	283	*6.43	1.960	Dec. 13	2100	3,100	87.8	3.64	1.109

Minimum discharge during period October 1977 to September 1978, 118 ft^3/s (3.34 m^3/s) Oct. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	686	2810	270			---	340				
2	228	1140	5900	250			---	320				
3	208	612	2800	340			---	300				
4	188	468	1670	550			---	290				
5	176	380	1190	503			---	280				
6	173	355	1580	426			---	270				
7	197	606	1390	426			---	260				
8	179	440	1010	644			---	250				
9	179	504	842	608			---	280				
10	161	1330	1100	525			---	333				
11	153	928	1720	455			---	374				
12	148	651	1450	424			---	352				
13	159	582	2090	405			---	409				
14	148	880	1910	396			---	708				
15	142	1060	1200	388			---	660				
16	142	864	894	363			---	564				
17	137	630	698	341			---	469				
18	135	504	576	329			---	404				
19	135	410	481	---			---	417				
20	132	341	414	---			---	536				
21	125	301	381	---			---	574				
22	120	285	348	---			---	430				
23	156	273	330	---			---	344				
24	191	285	315	---			---	320				
25	265	1510	300	---			---	300				
26	250	2690	290	---			432	290				
27	214	1430	280	---			597	360				
28	197	1230	270	---			578	468				
29	211	2110	290	---			474	463				
30	289	1150	320	---			396	397				
31	277	---	290	---			---	359				
TOTAL	5673	24635	35139	---			---	12121				
MEAN	183	821	1134	---			---	391				
MAX	289	2690	5900	---			---	708				
MIN	120	273	270	---			---	250				
CFSM	2.40	10.8	14.9	---			---	5.13				
IN.	2.77	12.03	17.15	---			---	5.92				
AC-FT	11250	48860	69700	---			---	24040				

CAL YR 1977 TOTAL 166046 MEAN 455 MAX 5900 MIN 109 CFSM 5.97 IN 81.06 AC-FT 329400

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE¼NE¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi (8.0 km) southeast of Buckley, 5.6 mi (9.0 km) downstream from Clearwater River, and at mile 29.7 (47.8 km).

DRAINAGE AREA.--400 mi^2 (1,036 km^2).

PERIOD OF RECORD.--October 1943 to current year. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earth-fill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft (131 hm^3) between elevations 895 ft (272.8 m), invert of outlet tunnel, and 1,215 ft (370.3 m), spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 55,880 acre-ft (68.9 hm^3) Aug. 23, 1974, elevation, 1,150.0 ft (350.52 m); no pool at times in some years.

EXTREMES FOR CURRENT YEAR.-- Maximum contents observed, 42,282 acre-ft (52.1 hm^3) Dec. 3, elevation, 1,126.6 ft (343.39 m); minimum observed, 52 acre-ft (64,100 hm^3) Sept. 8, elevation, 910.0 ft (277.37 m).

Capacity table (elevation, in feet, and total contents, acre-feet)
(Based on area maps by Corps of Engineers in 1939)

907	39	930	191	970	1,520	1,070	17,380
910	52	935	266	985	2,510	1,100	29,050
915	77	940	366	1,000	3,830	1,150	55,880
920	107	945	491	1,020	6,260		
925	141	955	817	1,040	9,680		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	787	648	2360	2194	1666	876	1816	2353	2145	837	478	94
2	783	2131	22345	2488	1248	856	1892	2338	2338	1329	557	464
3	860	1467	42282	2222	1204	1171	1879	2360	2117	1156	505	641
4	1041	344	37321	2458	1258	772	2450	2338	2427	661	502	186
5	844	674	24860	2481	1268	1209	2145	2309	2613	715	438	84
6	837	681	10279	2527	1522	2076	1989	2251	2558	578	448	69
7	1308	1258	10342	2481	1248	2481	1636	2222	1989	584	459	61
8	1298	880	3672	2732	1413	2913	1666	2215	888	603	443	52
9	1402	578	2043	2863	1161	2613	1683	2251	912	603	423	451
10	1413	1695	1495	2636	1161	1943	1707	2324	794	563	401	252
11	1360	1133	2938	1924	1068	1822	1786	2360	718	563	389	99
12	1258	941	2930	1822	1068	775	1996	2405	658	548	366	251
13	1467	674	2872	1892	1185	829	1835	2390	701	569	351	87
14	1318	840	8712	1138	1077	779	1866	2550	688	584	346	84
15	1483	1209	6819	1835	1082	743	1885	2724	732	563	279	86
16	1418	1695	6212	1792	1036	880	1956	2732	691	638	275	85
17	1435	403	3252	1413	1014	648	1983	2302	664	609	266	93
18	1601	366	2016	1392	2090	622	2002	1138	705	908	280	98
19	1209	772	3828	1516	2621	917	2124	975	677	1478	218	93
20	1329	754	5051	1068	3067	635	2166	1500	671	2076	170	92
21	1350	708	2589	1318	3172	609	2229	1500	658	1804	172	91
22	1303	743	1930	1303	1749	609	2237	1036	674	1683	184	88
23	1360	896	2016	1185	1005	609	2258	937	625	1713	185	100
24	1456	1105	2111	1298	1001	648	2229	876	619	2049	181	99
25	1567	1408	2117	1161	837	609	2229	917	628	1578	270	100
26	1387	3172	2104	1298	825	609	2309	1128	628	1023	183	89
27	1243	2345	2104	1161	992	962	2465	1500	578	631	168	82
28	1387	2443	2117	1142	937	2558	2511	1963	619	557	132	78
29	933	2998	2152	1258	---	1755	2412	2016	694	557	103	79
30	896	2748	2222	1161	---	661	2382	2043	2180	557	92	79
31	1695	---	2187	1138	---	609	---	2076	---	551	83	---
MAX	1695	3172	42282	2863	3172	2913	2511	2732	2613	2076	557	641
MIN	783	344	1495	1068	825	609	1636	876	578	548	83	52
††	957.8	984.7	980.7	969.2	959.0	966.3	983.0	979.7	963.8	945.4	917.2	914.7
†	929	2,488	2,194	1,478	979	1,324	2,360	2,124	1,199	502	90	76
‡	+85	+1,559	-294	-716	-499	+345	+1,036	-236	-925	-697	-412	-14

CAL YR 1977....................‡ +2,106
WTR YR 1978....................‡ -768

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW¼NW¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi (0.6 km) upstream from Red Creek, 1.7 mi (2.7 km) downstream from Mud Mountain Dam, 3.8 mi (6.1 km) east of Buckley, 7.4 mi (11.9 km) downstream from Clearwater River and at mile 27.9 (44.9 km).

DRAINAGE AREA.--401 mi^2 (1,039 km^2).

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year. Water temperatures March 1971 to September 1972, sediment records November 1971 to November 1972.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder, at site 3 mi (4.8 km) upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except those below 100 ft^3/s (2.83 m^3/s), which are poor. Flow regulated by Mud Mountain Lake (see sta 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion above station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--45 years (water years, 1929-33, 1939-78), 1,461 ft^3/s (41.38 m^3/s) 49.48 in/yr (1,257 mm/yr), 1,058,000 acre-ft/yr (1,300 hm^3/yr); adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft^3/s (481 m^3/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 3,500 ft^3/s (99.1 m^3/s); probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958, Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily, 59 ft^3/s (1.67 m^3/s) June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft (7.13 m), from floodmarks, at former site, discharge, 28,000 ft^3/s (793 m^3/s), from rating curve extended above 3,500 ft^3/s (99.1 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,800 ft^3/s (419 m^3/s) Dec. 2, elevation, 808.30 ft (246.370 m); minimum, 11 ft^3/s (0.312 m^3/s) Sept. 11; minimum daily, 426 ft^3/s (12.1 m^3/s) Oct. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	705	1320	4940	870	900	840	1200	1560	1480	1880	786	906
2	625	3070	10200	906	924	770	1250	1480	1780	1730	882	870
3	578	2200	12900	990	978	822	864	1450	1930	1690	918	900
4	600	1420	12600	1220	954	804	1340	1400	2280	1560	1090	870
5	600	1180	11600	1240	1000	576	1200	1320	2730	1560	1000	978
6	494	1070	5830	1230	1170	630	1160	1220	2950	1520	894	984
7	526	1260	6570	1140	1130	750	954	1150	2720	1560	882	876
8	586	1230	4670	1640	1130	1000	888	1150	2330	1590	906	760
9	530	1140	2930	1830	1080	1130	846	1220	2420	1560	942	1230
10	542	2240	2820	1790	984	1030	822	1320	2260	1340	948	1560
11	562	2440	4700	1630	912	1150	870	1430	1940	1220	912	1020
12	438	1810	4540	1270	882	930	828	1470	1770	1180	894	1140
13	558	1610	4660	1420	840	864	810	1480	1830	1170	924	888
14	458	2160	7500	1240	786	780	810	2060	1780	1240	780	816
15	490	2840	6080	1240	780	750	804	2340	1710	1240	1230	780
16	490	2860	4940	1270	745	740	990	2400	1600	1450	1110	725
17	446	2370	4110	1170	615	750	996	2390	1550	1360	786	930
18	558	1740	2720	1080	508	840	1070	1990	1670	1110	755	852
19	442	1410	990	1080	750	882	1310	1730	1800	960	725	760
20	434	1210	3050	984	730	822	1420	1930	1800	1080	670	720
21	426	1070	2260	1080	1040	882	1440	2220	1860	1170	695	700
22	446	1020	1710	1100	1180	1010	1440	2080	1840	1110	750	745
23	446	982	1560	966	882	1100	1390	1810	1750	1140	730	1540
24	546	940	1480	918	876	1140	1290	1620	1600	1280	876	1300
25	850	2640	1400	900	1140	1230	1280	1490	1530	1300	906	1120
26	802	6580	1290	954	1150	1290	1480	1370	1480	1290	720	930
27	630	3920	1200	888	936	750	1850	1360	1530	1260	660	876
28	680	3800	1140	894	918	1470	1990	1610	1700	1080	605	852
29	735	4990	1150	900	---	1730	1840	1560	1440	990	605	810
30	675	4060	1150	858	---	1470	1680	1470	2090	942	690	786
31	1020	---	1030	792	---	1220	---	1440	---	876	858	---
TOTAL	17918	66582	133720	35490	25920	30152	36112	50520	57150	40438	26129	28224
MEAN	578	2219	4314	1145	926	973	1204	1630	1905	1304	843	941
MAX	1020	6580	12900	1830	1180	1730	1990	2400	2950	1880	1230	1560
MIN	426	940	990	792	508	576	804	1150	1440	876	605	700
AC-FT	35540	132100	265200	70390	51410	59810	71630	100200	113400	80210	51830	55980
†	+85	+1,559	-294	-716	-499	+345	+1,036	-236	-925	-697	-412	-14
MEAN‡	579	2,247	4,307	1,133	917	978	1,222	1,625	1,891	1,293	836	941
CFSM‡	1.44	5.60	10.7	2.83	2.29	2.44	3.05	4.05	4.72	3.22	2.08	2.35
IN.‡	1.67	6.25	12.39	3.26	2.38	2.81	3.40	4.67	5.26	3.72	2.40	2.62
AC-FT‡	35,620	133,700	264,900	69,670	50,910	60,160	72,670	99,960	112,500	79,510	51,420	55,970

CAL YR 1977: TOTAL 509,935 MEAN 1,397 MAX 12,900 MIN 426 AC-FT 1,011,000
DO.....: MEAN‡ 1,399 CFSM‡ 3.49 IN‡ 47.37 AC-FT‡ 1,013,000
WTR YR 1978: TOTAL 548,355 MEAN 1,502 MAX 12,900 MIN 426 AC-FT 1,088,000
DO.....: MEAN‡ 1,501 CFSM‡ 3.74 IN‡ 50.83 AC-FT‡ 1,087,000

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† Change in contents, in acre-feet, in Mud Mountain Lake, furnished by Corps of Engineers.
‡ Adjusted for change in contents in Mud Mountain Lake.

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE¼SE¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on right bank at upstream side of county road bridge, 1.0 mi (1.6 km) northeast of Buckley, and at mile 0.1 (0.2 km).

DRAINAGE AREA.--15.4 mi^2 (39.9 km^2).

PERIOD OF RECORD.--March 1977 to current year. Chemical analyses January 1963 to September 1964, October 1972 to September 1973.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good. Flow partly regulated by millpond at mile 5.6 (9.0 km). Diversions above station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft^3/s (0.057 m^3/s) during low flow periods enters Boise Creek above millpond.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 408 ft^3/s (11.6 m^3/s) Dec. 2, 1977, gage height, 2.95 ft (0.899 m); minimum, 4.2 ft^3/s (0.12 m^3/s) Aug. 16, 17, 1977, gage height, 0.85 ft (0.259 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 408 ft^3/s (11.6 m^3/s) Dec. 2, gage height, 2.95 ft (0.899 m); minimum, 5.8 ft^3/s (0.16 m^3/s) Aug. 9, gage height, 1.02 ft (0.311 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	68	110	26	40	31	24	34	17	12	7.5	22
2	18	97	315	23	54	27	23	31	16	12	7.5	17
3	15	59	220	38	55	26	22	31	16	12	7.5	15
4	14	42	167	47	51	31	31	31	15	12	7.5	16
5	12	35	109	42	51	26	31	28	14	11	7.5	24
6	14	30	150	40	52	24	27	26	13	10	7.7	22
7	18	29	120	46	41	31	24	23	13	10	6.9	21
8	15	25	77	67	38	31	23	21	13	10	6.7	18
9	16	27	67	60	37	27	21	21	20	10	6.4	22
10	13	50	125	54	32	25	20	23	26	10	6.9	21
11	12	39	155	46	31	26	19	35	23	11	8.0	18
12	11	38	135	44	28	29	18	33	17	10	13	16
13	12	43	190	40	25	28	18	36	21	9.5	11	15
14	11	53	170	42	24	25	19	41	23	9.2	9.2	14
15	10	44	137	35	29	23	21	43	36	9.5	17	14
16	13	53	104	31	26	23	65	42	28	15	12	13
17	11	40	79	31	24	22	44	35	24	13	10	48
18	10	38	68	28	28	22	48	31	21	11	9.8	31
19	9.7	33	60	26	31	21	70	27	17	10	13	23
20	9.7	28	48	25	27	20	70	24	15	9.8	11	19
21	9.4	26	41	58	25	19	65	23	15	9.8	10	19
22	9.7	25	40	48	24	19	77	21	14	9.2	15	28
23	12	27	37	35	26	22	68	20	13	9.2	13	160
24	15	45	35	31	26	22	54	18	13	8.6	15	77
25	33	157	33	32	47	26	42	18	13	8.0	13	48
26	33	150	31	41	48	24	49	20	13	9.2	13	34
27	23	108	29	34	34	21	65	29	12	12	15	31
28	20	127	28	35	34	27	55	29	11	9.2	10	30
29	21	145	32	38	---	24	47	25	11	9.2	9.2	25
30	34	82	41	32	---	30	41	21	13	8.9	8.9	24
31	33	---	30	32	---	26	---	18	---	8.0	15	---
TOTAL	507.5	1763	2983	1207	988	778	1201	858	516	318.3	323.2	885
MEAN	16.4	58.8	96.2	38.9	35.3	25.1	40.0	27.7	17.2	10.3	10.4	29.5
MAX	34	157	315	67	55	31	77	43	36	15	17	160
MIN	9.4	25	28	23	24	19	18	18	11	8.0	6.4	13
AC-FT	1010	3500	5920	2390	1960	1540	2380	1700	1020	631	641	1760

WTR YR 1978 TOTAL 12328.0 MEAN 33.8 MAX 315 MIN 6.4 AC-FT 24450

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE¼SE¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 150 ft (46 m) downstream from railway bridge, 200 ft (61 m) downstream from Boise Creek, 1.0 mi (1.6 km) northeast of Buckley, and at mile 23.3 (37.5 km).

DRAINAGE AREA.--427 m^2 (1,106 km^2).

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to current year. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 620 ft (189 m), from topographic map. June 8, 1910 to Nov. 30, 1911, nonrecording gage at site 150 ft (46 m) upstream at different datum, and Jan. 18, 1913 to Sept. 30, 1938, water-stage recorder at site 100 ft (30 m) upstream at National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power and Light Co.).

REMARKS.--Records good except those for period of no gage-height record Oct. 8 to Nov. 26, which are poor. Since November 1911, White River flume has diverted from left bank 1.0 mi (1.6 km) upstream for storage in Lake Tapps (see sta 12101000), average flow diverted for the period 1963-78 was 926 ft^3/s (26.2 m^3/s). Water is returned to White River 19.7 mi (31.7 km) downstream via the Lake Tapps Diversion (see sta 12101100) after power development at Dieringer-White powerplant. Since 1942, flow regulated by Mud Mountain Lake (see sta 12098000) for flood control.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft^3/s (654 m^3/s) Dec. 18, 1917, during period of combined flows; minimum, not determined. River only after April 1977, maximum discharge, 14,300 ft^3/s (405 m^3/s) Dec. 2, 1977, gage height, 9.11 ft (2.777 m); minimum, 27 ft^3/s (0.76 m^3/s) July 30, 31, 1978, gage height, 2.40 ft (0.732 m); minimum daily, 31 ft^3/s (0.88 m^3/s) July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft^3/s (405 m^3/s) Dec. 2, gage height, 9.11 ft (2.777 m); minimum, 27 ft^3/s (0.76 m^3/s) July 30, 31, gage height, 2.40 ft (0.732 m); minimum daily, 31 ft^3/s (0.88 m^3/s) July 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	290	4050	64	70	940	1190	69	51	236	770	818
2	52	1400	10600	64	84	886	1270	66	97	58	762	810
3	50	360	13500	75	80	904	746	64	130	72	859	818
4	48	60	12900	91	72	970	82	64	472	50	1220	859
5	45	80	11400	75	70	526	75	61	868	49	1050	913
6	47	100	5980	74	69	165	75	58	1040	47	970	940
7	50	200	6170	80	68	212	72	56	922	49	922	842
8	40	100	5050	196	66	253	75	55	557	51	904	738
9	60	140	3200	276	64	236	75	55	648	50	940	1080
10	50	830	3060	212	60	186	69	58	514	43	913	1590
11	50	1200	4990	104	60	84	106	70	236	43	913	834
12	60	590	5110	77	60	67	102	67	130	42	877	370
13	80	450	5080	72	60	70	110	72	172	43	850	87
14	40	750	7740	72	120	478	117	370	454	44	762	82
15	50	1200	6310	66	196	818	117	613	922	42	913	64
16	50	1100	5350	63	153	818	156	669	80	51	877	56
17	35	680	4360	61	130	850	87	662	74	45	762	104
18	80	100	2960	60	75	859	93	298	74	39	730	69
19	35	70	950	57	87	868	110	72	91	40	746	63
20	50	90	1720	56	74	877	112	262	104	44	714	58
21	50	50	970	93	68	904	106	490	141	36	698	58
22	35	80	544	75	150	960	120	405	168	40	754	69
23	50	80	454	66	627	1070	108	135	132	45	746	321
24	80	80	448	63	960	1120	91	61	63	44	802	108
25	120	1600	442	63	1050	1220	82	58	58	39	922	80
26	90	4700	436	74	1090	1280	89	57	57	39	754	66
27	40	4050	330	66	970	810	135	66	57	41	698	61
28	100	3680	120	66	960	1340	253	75	66	37	662	63
29	60	4320	70	69	---	1800	135	62	150	35	641	60
30	80	3880	77	64	---	1410	79	55	400	31	662	58
31	190	---	66	64	---	1250	---	52	---	280	794	---
TOTAL	1921	32310	124437	2658	7593	24231	6037	5277	8928	1805	25587	12139
MEAN	62.0	1077	4014	85.7	271	782	201	170	298	58.2	825	405
MAX	190	4700	13500	276	1090	1800	1270	669	1040	280	1220	1590
MIN	35	50	66	56	60	67	69	52	51	31	641	56
AC-FT	3810	64090	246800	5270	15060	48060	11970	10470	17710	3580	50750	24080

WTR YR 1978 TOTAL 252923 MEAN 693 MAX 13500 MIN 31 AC-FT 501700

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE¼NE¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi (2.7 km) east of Dieringer and 3.5 mi (5.6 km) northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 0.7 ft (0.2 m) National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power & Light Co.).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959 put into use Oct. 1, 1958), 46,600 acre-ft (57.5 hm^3) between gage heights of 515 ft (157.0 m) normal minimum pool, and 543 ft (165.5 m), normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the Dieringer White River powerplant.

COOPERATION.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft (63.8 hm^3) June 30, 1958, gage height, 541.57 ft (165.071 m), capacity table dated Jan. 19, 1920; maximum gage height observed, 543.04 ft (165.519 m) June 19, 1967; minimum contents observed, not determined (below normal minimum pool) Apr. 3, 1978, gage height, 514.90 ft (156.942 m); minimum gage height, 505.70 ft (154.137 m) June 24, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 46,655 acre-ft (57.5 hm^3) July 31, gage height, 543.00 ft (165.506 m); minimum observed, not determined (below normal minimum pool) Apr. 3, gage height, 514.90 ft (156.942 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	542.24	44,742	------
Oct. 31	542.51	45,421	+679
Nov. 30	541.48	42,867	-2,554
Dec. 31	536.35	30,984	-11,883
CAL YR 1977	------	------	-13,354
Jan. 31	531.35	20,938	-10,046
Feb. 28	525.69	11,906	-9,032
Mar. 31	515.01	9	-11,897
Apr. 30	537.51	30,562	+30,553
May 31	541.58	43,111	+12,549
June 30	541.65	43,282	+171
July 31	543.00	46,655	+3,373
Aug. 31	541.88	43,844	-2,811
Sept. 30	542.11	44,414	+570
WTR YR 1978	------	------	-328

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW¼NW¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft (259 m) downstream from White River powerplant at Dieringer and 1,400 ft (427 m) upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 m), from topographic map.

REMARKS.--Records excellent. Flow regulated by White River powerplant.

AVERAGE DISCHARGE.--20 years, 982 ft³/s (27.81 m³/s), 711,500 acre-ft/yr (887 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s (71.6 m³/s) Jan.29, 1965, gage height, 6.23 ft (1.899 m); maximum gage height, 6.72 ft (2.048 m) Dec. 3, 1977 (backwater from White River); minimum, 7.2 ft³/s (0.20 m³/s) Sept. 29, 1967, gage height, 0.20 ft (0.061 m); minimum daily, 10 ft³/s (0.28 m³/s) Aug. 21, 22, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,370 ft³/s (67.1 m³/s) Dec. 2, gage height, 5.75 ft (1.753 m); maximum gage height, 6.72 ft (2.048 m) Dec. 3 (backwater from White River); minimum, 11 ft³/s (0.31 m³/s), Sept. 9-11, gage height, 0.35 ft (0.107 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	598	1140	1140	1590	1660	88	25	1590	1320	1650	28	12
2	477	1860	1520	1590	1660	72	25	1040	1500	1640	25	12
3	724	1860	35	1590	1670	111	36	1110	1660	1620	25	12
4	630	1710	35	1600	1680	36	42	995	1660	1050	25	12
5	412	1340	314	1600	1700	36	242	1160	1660	1210	25	12
6	683	967	296	1610	1690	471	336	763	1660	1370	25	12
7	428	969	298	1610	1680	719	334	692	1750	2010	25	12
8	564	1040	861	1610	1600	727	35	1250	1940	1050	25	12
9	32	1140	852	1610	1620	994	36	1430	1940	1330	25	12
10	547	1740	36	1620	1570	1210	329	1270	1940	1650	25	12
11	470	1760	36	1500	1530	782	823	1130	1940	1540	25	13
12	378	1590	70	1630	1470	835	830	563	1930	979	25	424
13	434	1360	37	1630	864	594	912	36	1930	880	26	906
14	554	1320	378	1630	814	178	479	618	1560	1270	26	62
15	351	1820	452	1630	867	27	420	1620	1100	1070	26	706
16	359	1730	487	1600	449	27	441	1670	1670	1630	26	1090
17	424	1590	36	1620	232	685	555	1670	1670	1580	26	1110
18	465	1620	36	1620	34	1180	213	1790	1670	1110	26	995
19	435	1600	583	1460	34	1180	195	1980	1660	945	26	544
20	512	1450	1110	42	670	1190	449	1650	1660	1080	26	1020
21	509	1200	1570	37	716	1190	720	1980	1660	740	26	866
22	371	890	1570	35	851	474	363	1990	1660	707	26	1080
23	372	921	1570	952	558	23	35	1980	1660	950	26	1080
24	489	816	1570	407	89	24	632	1980	1660	1390	26	1540
25	774	986	1580	1520	35	24	905	1780	1660	1700	26	1160
26	687	1620	1570	1160	35	24	1030	1520	1610	1210	26	1200
27	758	1380	1560	1650	81	24	1640	1320	1660	1260	26	1200
28	527	1030	1590	1320	106	24	1620	1320	1650	1260	26	902
29	602	1140	1590	1150	---	24	894	1320	1660	630	26	1010
30	586	1580	1590	1640	---	25	1040	1320	1660	872	20	168
31	698	---	1590	1660	---	25	---	1320	---	600	12	---
TOTAL	15850	41169	25962	41923	25965	13023	15636	41857	50360	37983	777	17196
MEAN	511	1372	837	1352	927	420	521	1350	1679	1225	25.1	573
MAX	774	1860	1590	1660	1700	1210	1640	1990	1940	2010	28	1540
MIN	32	816	35	35	34	23	25	36	1100	600	12	12
AC-FT	31440	81660	51500	83150	51500	25830	31010	83020	99890	75340	1540	34110

CAL YR 1977 TOTAL 345726 MEAN 947 MAX 1860 MIN 28 AC-FT 685700
WTR YR 1978 TOTAL 327701 MEAN 898 MAX 2010 MIN 12 AC-FT 650000

12101110 WHITE RIVER AT SUMNER, WA

LOCATION.--Lat 47°12'15", long 122°14'40", in NW¼SW¼ sec.24, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, at Main Street bridge, 509 ft (155.4 m) west of Sumner city limits.

DRAINAGE AREA.--494 mi² (1,279 km²).

PERIOD OF RECORD.--Water years 1972, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
06...	1300	1250	71	6.8	12.1	40	35
NOV							
16...	1245	3100	75	7.1	7.5	50	15
DEC							
07...	1220	8100	55	6.7	5.2	80	30
JAN , 1978							
05...	1200	1950	78	7.3	4.5	40	10
FEB							
16...	1250	890	85	6.8	5.3	25	4
MAR							
15...	1040	830	90	7.0	5.8	40	40
23...	1150	1090	73	7.0	9.9	40	74
APR							
19...	1215	1500	103	7.2	10.2	45	6
MAY							
10...	1235	1500	70	7.6	12.7	--	--
JUN							
14...	1315	2200	59	7.4	14.5	--	7
JUL							
26...	1200	1800	53	7.2	17.2	35	25
AUG							
16...	1245	1050	63	7.5	13.5	285	260
SEP							
07...	1215	1130	73	7.4	12.5	60	51

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
06...	10.1	.07	.15	.07	.01	.03
NOV						
16...	12.1	.24	.16	.06	.01	.03
DEC						
07...	12.8	.24	.11	.35	.02	.06
JAN , 1978						
05...	12.3	.38	.12	.05	.02	.06
FEB						
16...	12.4	.26	.09	.04	.01	.03
MAR						
15...	11.4	.18	.25	1.2	.02	.06
23...	10.2	.10	.14	.69	.01	.03
APR						
19...	10.6	.32	.16	.08	.02	.06
MAY						
10...	10.6	.04	.04	.08	.01	.03
JUN						
14...	9.7	.03	.08	.02	.01	.03
JUL						
26...	8.6	.02	.11	.08	.01	.03
AUG						
16...	10.1	.08	.09	.80	.02	.06
SEP						
07...	11.0	.08	.20	.57	.02	.06

12101475 PUYALLUP RIVER AT MERIDIAN STREET BRIDGE AT PUYALLUP, WA

LOCATION.--Lat 47°12'10", long 122°17'33", on least line sec.22, T.20 N., R 4 E., Pierce County, Hydrologic Unit 17110014, at Meridian Street bridge in Puyallup, 1.7 mi (2.7 km) upstream from gaging station (12101500) and at mile 8.3 (13.4 km).

DRAINAGE AREA.--948 mi^2 (2,455 km^2).

PERIOD OF RECORD.--Water years 1968-71, 1974-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
05...	1325	2100	78	6.9	11.0	35	29
NOV							
16...	1305	5890	60	7.2	7.2	45	15
DEC							
07...	1250	1170	53	6.8	5.0	65	90
JAN , 1978							
05...	1225	4360	73	7.3	5.5	15	8
FEB							
16...	1400	2030	88	6.8	5.3	25	2
MAR							
15...	1100	1840	90	7.1	6.2	45	45
APR							
19...	1310	1750	80	7.4	9.8	45	6
MAY							
10...	1335	2140	72	7.6	11.8	--	--
JUN							
14...	1345	3640	62	7.4	13.8	--	11
JUL							
26...	1245	3210	50	7.3	15.9	55	66
AUG							
16...	1345	2690	54	7.4	11.7	1530	700
SEP							
07...	1300	2390	73	7.5	12.6	55	39

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
06...	10.7	.09	.20	.06	.01	.03
NOV						
16...	12.4	.28	.10	.06	.01	.03
DEC						
07...	12.8	.30	.11	.27	.01	.03
JAN , 1978						
05...	12.3	.38	.13	.07	.02	.06
FEB						
16...	12.7	.28	.09	.03	.01	.03
MAR						
15...	12.5	.21	.26	.56	.02	.06
APR						
19...	11.2	.20	.08	.18	.01	.03
MAY						
10...	11.0	.07	.04	.02	.01	.03
JUN						
14...	10.4	.04	.08	.03	.01	.03
JUL						
26...	9.3	.04	.27	.31	.02	.06
AUG						
16...	10.7	.08	.19	1.4	.03	.09
SEP						
07...	11.3	.10	.15	.20	.02	.06

12101500 PUYALLUP RIVER AT PUYALLUP, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 47°12'31", long 122°19'33", in SE¼NW¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014 on left bank 0.8 mi (1.3 km) upstream from bridge at Clark Creek, 2.0 mi (3.2 km) northwest of Puyallup City Hall, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--948 mi² (2,455 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi (1.9 km) upstream and 900 ft (274 m) upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft (152 m) upstream at datum 9.61 ft (2.929 m) higher than present datum.

REMARKS.--Water-discharge records good. All diverted water returned to river above gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (see sta 12101000). Flood flow regulated by Mud Mountain Lake (see sta 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt above station.

Since 1912 the city of Tacoma pipeline diversion from Green River has spilled as much as 123 ft³/s (3.48 m³/s) daily, and since 1957 an average of about 25 ft³/s (0.71 m³/s) per month into Puyallup River 0.5 mi (0.8 km) east of McMillin. Monthly mean discharge, in cubic feet per second, for the current year is as follows:

October.......	9.17	January......	1.50	April.......	0.85	July.......	9.73
November......	56.6	February.....	1.96	May.........	7.74	August.....	15.9
December......	9.72	March........	2.20	June........	4.38	September	2.69

AVERAGE DISCHARGE.--64 years, 3,386 ft³/s (95.89 m³/s) 2,453,000 acre-ft/yr (3,020 hm³) adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s (1,610 m³/s) Dec. 10, 1933, elevation, 31.0 ft (9.45 m), present datum; minimum, 306 ft³/s (8.67 m³/s) Sept. 25, 1955, elevation, 8.23 ft (2.509 m); minimum daily, 400 ft³/s (11.3 m³/s) Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,600 ft³/s (1,150 m³/s) Dec. 2, elevation, 27.20 ft (8.291 m); minimum, 564 ft³/s (16.0 m³/s) Oct. 23, elevation, 8.32 ft (2.536 m); minimum daily, 833 ft³/s (23.6 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1880	3060	9870	3300	3780	2400	2270	2940	3020	3740	1980	2150
2	1590	6710	35400	3100	4160	2190	2400	2420	3300	3380	1950	2170
3	1780	4810	26100	3500	4250	2040	2100	2360	3590	3240	2080	2170
4	1680	3780	20800	4460	4010	2370	1030	2190	3870	2530	2570	2160
5	1300	3120	16900	4430	4020	1960	1280	2230	4270	2560	2450	2260
6	1560	2520	12800	4160	4370	1750	1290	1900	4560	2770	2170	2380
7	1430	2980	11400	3920	4090	2210	1230	1640	4360	3520	2130	2150
8	1490	2700	9540	5050	3990	2470	903	2130	4250	2690	2180	1850
9	833	2700	6490	4970	3770	2620	868	2250	4200	2670	2340	2140
10	1380	5080	5530	4640	3480	2760	1140	2360	4330	2970	2170	2950
11	1250	5720	10700	4050	3280	2170	1590	2380	4020	2880	2020	2130
12	1120	4750	10600	3990	3090	2110	1670	2040	3700	2120	2070	1840
13	1260	4210	11000	3850	2430	1800	1730	1740	3770	1940	2010	1890
14	1340	4840	16800	4120	2140	1540	1360	2730	3480	2560	1710	1060
15	1080	6100	12800	4020	2360	1850	1300	3760	3690	2370	2440	1520
16	1090	6000	10000	3780	1810	1800	1630	3780	3370	3320	2740	1690
17	1140	5200	7840	3670	1480	2300	1930	3490	3250	3310	2070	1980
18	1170	4300	5500	3490	1130	2900	1520	3320	3310	2490	1800	1890
19	1120	3880	3740	3380	1190	2890	1730	3320	3370	2260	1840	1380
20	1190	3640	4120	1490	1860	2920	2180	3280	3480	2300	1770	1650
21	1160	2860	4160	1980	1920	2940	2430	3640	3480	2060	1670	1530
22	995	2630	4300	2240	1980	2350	2190	3490	3460	1980	1790	1860
23	1070	2620	4100	2780	2200	2130	1920	3240	3360	2330	1790	3440
24	1310	3100	4100	1920	2190	2320	2190	3130	3210	2720	1840	3540
25	2130	4910	4000	3400	2500	2300	2440	3010	3260	3000	2110	2680
26	2390	13900	3900	3000	3010	2590	2640	2790	3140	2710	1720	2540
27	2000	9640	3700	3540	2600	2080	3940	2740	3180	3130	1540	2500
28	1610	8160	3300	3190	2590	2260	3970	3130	3380	2490	1490	2170
29	1760	10500	3600	3180	---	3100	2980	2970	3560	1900	1520	2230
30	2050	9500	3600	3690	---	2700	2590	2920	3690	2030	1650	1370
31	2440	---	3400	3670	---	2720	---	2920	---	1830	1880	---
TOTAL	45598	153920	290090	109960	79680	72540	58441	86240	108830	81800	61490	63270
MEAN	1471	5131	9358	3547	2846	2340	1948	2782	3628	2639	1984	2109
MAX	2440	13900	35400	5050	4370	3100	3970	3780	4560	3740	2740	3540
MIN	833	2520	3300	1490	1130	1540	868	1640	3020	1830	1490	1060
AC-FT	90440	305300	575400	218100	158000	143900	115900	171100	215900	162300	122000	125500
†	+679	-2,554	-11,883	-10,046	-9,032	-11,897	+30,553	+12,549	+171	+3,373	-2,811	+570
MEAN‡	1,482	5,088	9,163	3,384	2,683	2,146	2,463	2,985	3,633	2,694	1,938	2,120
AC-FT‡	91,120	302,700	563,500	208,100	149,000	132,000	146,500	183,600	216,100	165,700	119,200	126,100

CAL YR 1977: TOTAL 1,161,782 MEAN 3,183 MAX 35,400 MIN 833 AC-FT 2,304,000
DO.....: MEAN‡ 3,164 AC-FT‡ 2,291,000
WTR YR 1978: TOTAL 1,211,859 MEAN 3,320 MAX 35,400 MIN 833 AC-FT 2,404,000
DO.....: MEAN‡ 3,320 AC-FT‡ 2,404,000

† Change in contents, in acre-feet, in Lake Tapps, from information by Puget Sound Power & Light Co.
‡ Adjusted for change in contents in Lake Tapps.

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at Clark Creek bridge 0.8 mi (1.3 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-68, 1971-72, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1959 to September 1961, August 1965 to September 1966.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data prior to February 1978 furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1977										
06...	1340	2090	78	6.8	10.9	35	28	--	10.6	--
NOV										
16...	1320	5920	63	7.2	7.2	45	17	--	12.4	--
DEC										
07...	1310	11800	54	6.8	5.0	65	110	--	12.9	--
JAN , 1978										
05...	1400	4400	74	7.4	5.4	40	7	--	12.3	--
25...	1130	3430	69	7.4	--	--	5	--	12.2	K36
FEB										
28...	1045	2700	82	6.9	5.6	--	30	--	11.6	460
MAR										
28...	1100	2260	63	7.2	9.4	--	25	--	10.8	280
APR										
26...	1030	2890	84	7.5	10.2	--	4	--	11.8	110
MAY										
31...	0930	2920	78	7.3	12.2	--	--	1.6	10.4	K21
JUN										
28...	1020	3450	55	7.7	15.5	--	--	5.7	9.6	68
AUG										
01...	1615	1990	64	6.8	16.6	--	--	80	9.8	K71
30...	1000	1710	63	7.2	15.8	--	--	150	9.1	320
SEP										
28...	1045	2270	74	6.7	12.2	--	--	39	10.1	900

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)
OCT , 1977										
06...	--	--	--	--	--	--	--	--	--	28
NOV										
16...	--	--	--	--	--	--	--	--	--	--
DEC										
07...	--	--	--	--	--	--	--	--	--	--
JAN , 1978										
05...	--	--	--	--	--	--	--	--	--	--
25...	K20	27	1	7.7	1.9	3.5	21	.3	.8	29
FEB										
28...	K130	30	3	8.4	2.1	4.1	22	.3	.9	32
MAR										
28...	K68	28	2	7.9	2.0	3.7	22	.3	.8	32
APR										
26...	36	25	0	7.1	1.8	3.5	23	.3	.8	35
MAY										
31...	44	27	0	8.1	1.7	3.5	21	.3	.8	--
JUN										
28...	K3	25	4	6.3	2.5	3.2	21	.3	.7	--
AUG										
01...	K67	23	1	6.7	1.6	3.5	24	.3	.9	--
30...	K13	24	3	6.8	1.8	4.5	28	.4	1.0	--
SEP										
28...	5	24	6	6.7	1.8	3.9	23	.3	.8	--

K Results based upon colony counts outside the ideal range.

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA

DATE	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)
OCT , 1977										
06...	0	23	7.1	5.5	2.1	--	--	--	--	--
NOV										
16...	--	--	--	--	--	--	--	--	--	--
DEC										
07...	--	--	--	--	--	--	--	--	--	--
JAN , 1978										
05...	--	--	--	--	--	--	--	--	--	--
25...	0	24	1.8	6.3	2.2	.1	16	51	53	.07
FEB										
28...	0	26	6.4	6.4	2.7	.1	17	57	57	.08
MAR										
28...	0	26	3.2	7.7	2.2	.1	16	52	56	.07
APR										
26...	0	29	1.8	5.7	1.7	.1	15	51	53	.07
MAY										
31...	--	28	--	4.7	2.3	.1	13	51	51	.07
JUN										
28...	--	21	--	8.2	1.4	.1	13	43	48	.06
AUG										
01...	--	22	--	7.0	1.7	.1	13	46	48	.06
30...	--	21	--	11	2.3	.1	15	56	55	.08
SEP										
28...	--	24	--	8.3	2.2	.1	13	59	53	.08

DATE	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)
OCT , 1977										
06...	--	--	.10	.19	--	--	--	--	--	--
NOV										
16...	--	--	.27	.10	--	--	--	--	--	--
DEC										
07...	--	--	.29	.11	--	--	--	--	--	--
JAN , 1978										
05...	--	--	.38	.13	--	--	--	--	--	--
25...	472	20	.27	.03	.24	.27	.13	.14	.54	2.4
FEB										
28...	416	142	.01	.01	.34	.35	.26	.09	.36	1.6
MAR										
28...	317	97	.14	.06	.22	.28	.12	.16	.42	1.9
APR										
26...	398	25	.27	.06	.25	.31	.07	.24	.58	2.6
MAY										
31...	402	8	.05	.05	--	--	--	.60	--	--
JUN										
28...	401	30	.02	.01	.13	.14	.14	.00	.16	.71
AUG										
01...	247	2	.09	.10	.44	.54	.22	.32	.63	2.8
30...	259	1100	.07	.06	.71	.77	.52	.25	.84	3.7
SEP										
28...	362	102	.16	.04	.15	.19	.00	--	.35	1.6

DATE	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977										
06...	.07	--	.01	.03	--	--	--	--	--	--
NOV										
16...	.07	--	.01	.03	--	--	--	--	--	--
DEC										
07...	.25	--	.02	.06	--	--	--	--	--	--
JAN , 1978										
05...	.05	--	.02	.06	--	--	--	--	--	--
25...	.03	.02	--	--	--	3.5	.4	81	750	11
FEB										
28...	.12	.02	--	--	--	--	--	204	1490	60
MAR										
28...	.26	.03	--	--	6.0	--	--	355	2170	45
APR										
26...	.04	.01	--	--	--	10	.5	215	1680	14
MAY										
31...	.26	.03	--	--	1.6	--	--	163	1290	4
JUN										
28...	.04	.02	--	--	2.3	--	--	62	578	26
AUG										
01...	.24	.01	--	--	--	3.8	1.4	210	1130	92
30...	.63	.03	--	--	7.8	--	--	1030	4760	89
SEP										
28...	.33	.03	--	--	2.4	--	--	227	1390	18

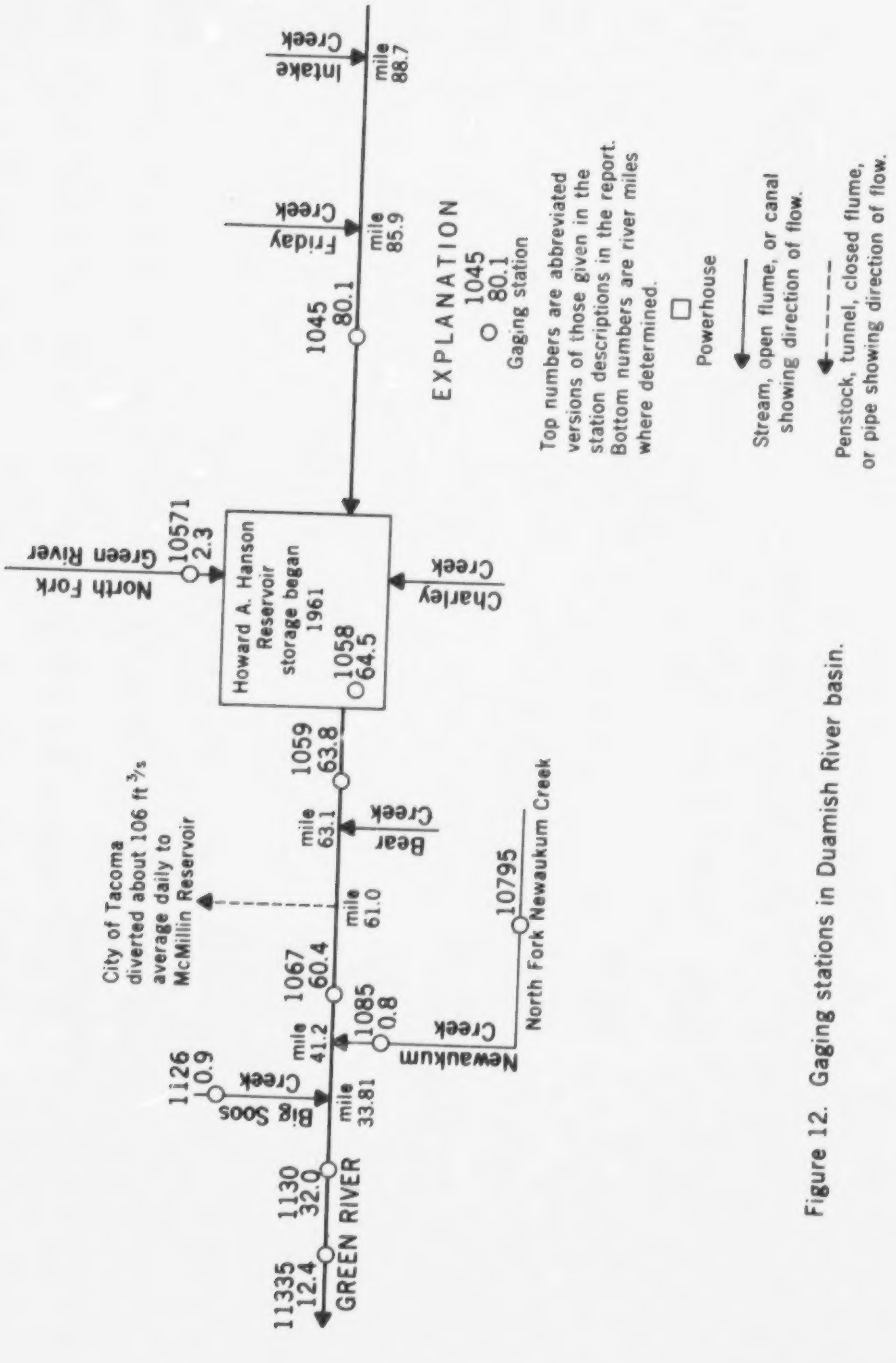

Intake Creek
mile 88.7
Friday Creek
mile 85.9
1045
80.1
North Fork Green River
10571
2.3
Howard A. Hanson Reservoir storage began 1961
1058
64.5
Charley Creek
1059
63.8
Bear Creek
mile 63.1
City of Tacoma diverted about 106 ft³/s average daily to McMillin Reservoir
mile 61.0
10795
North Fork Newaukum Creek
1067
60.4
1085
0.8
Newaukum Creek
mile 41.2
1126
0.9
Big Soos Creek
mile 33.81
1130
32.0
11335
12.4
GREEN RIVER
EXPLANATION
1045
80.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 12. Gaging stations in Duamish River basin.

12104500 GREEN RIVER NEAR LESTER, WA

LOCATION.--Lat 47°12'28", long 121°33'07", in NE¼SE¼ sec.20, T.20 N., R.10 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi (0.6 km) upstream from Champion Creek, 1.2 mi (1.9 km) downstream from McCain Creek, 2.9 mi (4.7 km) west of Lester, and at mile 80.1 (128.9 km).

DRAINAGE AREA.--96.2 mi² (249.2 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1947(M). WSP 1316: 1948(M). WSP 1932: 1960, drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m), from river-profile map. Prior to Nov. 22, 1959, water-stage recorder at site 300 ft (91 m) upstream at different datum (gage destroyed by flood of Nov. 22, 1959), Dec. 28, 1959, to Sept. 21, 1960, nonrecording gage at site 400 ft (122 m) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--33 years, 406 ft³/s (11.50 m³/s) 57.31 in/yr (1,456 mm/yr), 294,100 acre-ft/yr (363 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 22,000 ft³/s (623 m³/s) Nov. 22, 1959, gage height, 12.41 ft (3.783 m), from floodmarks, present site and datum, on basis of slope-area measurement of peak flow; minimum, 22 ft³/s (0.62 m³/s) Nov. 20, 1952, Sept. 27, 1967, part or all of each day Oct. 18-20, 23-27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 26	0300	2,620	74.2	5.25	1.600	Dec. 2	0200	*15,000	425	*10.42	3.176
Nov. 29	1100	3,210	90.9	5.73	1.747						

Minimum discharge, 53 ft³/s (1.50 m³/s) Aug. 9, 10, gage height, 1.19 ft (0.363 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	178	762	4250	209	171	243	500	465	290	123	64	62
2	168	1180	11000	202	171	229	438	433	298	121	62	61
3	159	702	2930	202	174	215	388	420	314	119	61	60
4	148	500	1510	209	196	205	370	397	326	119	61	60
5	136	390	1030	202	243	196	343	366	330	116	60	61
6	131	340	876	193	306	189	314	339	318	114	58	65
7	139	547	852	186	322	196	290	326	290	110	57	64
8	126	480	708	196	322	212	274	326	262	107	55	64
9	129	445	610	193	306	215	262	348	262	103	54	64
10	119	762	626	205	278	222	274	357	250	101	54	75
11	112	905	924	202	254	229	314	384	229	97	57	78
12	108	744	1040	196	236	225	298	397	218	93	60	73
13	108	663	1350	189	222	225	282	411	215	89	60	70
14	101	1360	1500	189	209	215	266	520	205	85	58	70
15	97	1440	1170	202	199	205	254	565	199	83	87	76
16	95	1110	930	205	186	205	278	565	193	97	76	99
17	91	816	758	202	177	215	266	550	180	95	68	131
18	90	646	637	196	180	246	274	510	177	87	64	136
19	86	525	555	196	199	290	298	485	171	83	65	123
20	84	440	490	196	229	326	339	490	166	83	64	116
21	81	375	443	215	243	366	348	490	160	80	62	112
22	79	335	406	243	274	429	352	447	154	76	67	119
23	83	279	375	232	302	510	343	397	149	73	65	186
24	86	258	343	215	326	515	330	352	146	71	64	196
25	106	912	318	205	318	550	334	322	149	70	62	160
26	112	2240	290	209	298	570	397	298	141	70	62	144
27	106	1490	270	205	274	565	545	310	133	73	60	131
28	99	1690	254	199	258	565	620	318	131	68	58	128
29	99	2690	250	189	---	565	575	314	131	67	57	119
30	151	1660	239	183	---	580	520	298	128	65	58	107
31	205	---	225	177	---	560	---	286	---	64	61	---
TOTAL	3612	26686	37159	6242	6873	10278	10686	12486	6315	2802	1921	3010
MEAN	117	890	1199	201	245	332	356	403	211	90.4	62.0	100
MAX	205	2690	11000	243	326	580	620	565	330	123	87	196
MIN	79	258	225	177	171	189	254	286	128	64	54	60
CFSM	1.22	9.25	12.5	2.09	2.55	3.45	3.70	4.19	2.19	.94	.64	1.04
IN.	1.40	10.32	14.37	2.41	2.66	3.97	4.13	4.83	2.44	1.08	.74	1.16
AC-FT	7160	52930	73700	12380	13630	20390	21200	24770	12530	5560	3810	5970

CAL YR 1977 TOTAL 131760 MEAN 361 MAX 11000 MIN 36 CFSM 3.75 IN 50.95 AC-FT 261300
WTR YR 1978 TOTAL 128070 MEAN 351 MAX 11000 MIN 54 CFSM 3.65 IN 49.52 AC-FT 254000

12105710 NORTH FORK GREEN RIVER NEAR LEMOLO, WA

LOCATION.--Lat 47°18'21", long 121°46'20", near line between SW¼ and SE¼ sec.15, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on left bank 1.8 mi (2.9 km) northeast of Lemolo siding, 5.5 mi (8.8 km) east of Palmer, and at mile 2.3 (3.7 km).

DRAINAGE AREA.--16.7 mi² (43.3 km²).

PERIOD OF RECORD.--June 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,250 ft (381 m), from topographic map.

REMARKS.--Records good except those for period Oct. 31 to Feb. 8, which are poor. No regulation or diversion. Considerable water goes underground a short distance above the gage and, at times during dry summers, the streambed at the gage may become completely dry.

AVERAGE DISCHARGE.--13 years, 88.9 ft³/s (2.518 m³/s) 72.29 in/yr (1,836 mm/yr) 64,410 acre-ft/yr (79.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Dec. 2, 1975, gage height, 8.29 ft (2.527 m); no flow Aug. 8, 9, 18, Sept. 5-13, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 28, 1965 reached a stage of 9.50 ft (2.896 m) from floodmarks, discharge, 2,370 ft³/s (67.1 m³/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*) from outside high-water mark:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	unknown	unknown	---	unknown	---	Dec. 2	unknown	*2,000	56.6	*8.26	2.518
Nov. 26	unknown	unknown	---	unknown	---	Dec. 13	unknown	unknown	---	unknown	---
Nov. 29	unknown	unknown	---	unknown	---						

Minimum discharge, 4.0 ft³/s (0.11 m³/s) Aug. 10, gage height, 3.82 ft (1.164 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	580	1000	42	50	45	67	83	51	19	6.0	32
2	30	500	1700	40	62	41	63	75	47	18	6.0	23
3	27	330	900	45	77	38	62	73	45	17	5.8	20
4	25	200	450	80	81	37	60	67	41	21	5.5	17
5	22	120	250	82	85	34	62	63	37	18	5.3	22
6	23	150	330	80	102	33	58	60	35	16	5.0	23
7	30	220	310	90	95	58	55	55	33	14	4.8	21
8	25	160	230	115	98	71	51	50	31	14	4.5	23
9	32	210	170	100	92	58	48	48	41	13	4.3	26
10	25	400	260	88	79	53	47	48	47	14	4.5	24
11	22	290	420	78	69	53	48	71	41	15	5.8	27
12	20	220	400	74	60	53	45	77	34	13	8.5	25
13	24	230	600	68	56	51	41	87	34	12	8.5	23
14	20	450	490	66	51	51	41	110	33	11	7.1	22
15	19	290	400	62	50	50	40	113	40	11	37	40
16	19	200	270	60	48	48	47	116	44	18	18	40
17	18	149	190	56	47	53	48	107	35	18	13	77
18	18	126	140	54	47	58	58	95	33	14	11	75
19	17	108	110	52	50	58	69	85	32	13	14	58
20	16	92	90	50	48	56	79	77	28	12	11	50
21	16	80	80	62	50	56	79	65	26	11	10	45
22	16	77	70	56	50	60	85	60	25	9.5	14	62
23	17	73	66	52	56	65	95	55	24	8.8	14	179
24	24	71	62	50	55	67	95	48	23	8.5	14	154
25	51	780	58	52	51	107	95	44	28	8.1	13	110
26	51	840	54	56	51	92	92	45	25	8.1	11	90
27	42	520	52	53	48	83	116	65	22	8.8	10	83
28	37	640	50	51	48	83	125	71	21	8.1	9.2	73
29	45	800	48	50	---	79	116	67	19	7.4	8.5	60
30	82	350	47	48	---	77	97	65	21	7.1	8.1	53
31	70	---	45	48	---	77	---	56	---	6.4	13	---
TOTAL	917	9256	9342	1960	1756	1845	2084	2201	996	392.8	310.4	1577
MEAN	29.6	309	301	63.2	62.7	59.5	69.5	71.0	33.2	12.7	10.0	52.6
MAX	82	840	1700	115	102	107	125	116	51	21	37	179
MIN	16	71	45	40	47	33	40	44	19	6.4	4.3	17
CFSM	1.77	18.5	18.0	3.78	3.75	3.56	4.16	4.25	1.99	.76	.60	3.15
IN.	2.04	20.62	20.81	4.37	3.91	4.11	4.64	4.90	2.22	.87	.69	3.51
AC-FT	1820	18360	18530	3890	3480	3660	4130	4370	1980	779	616	3130

CAL YR 1977 TOTAL 36599.4 MEAN 100 MAX 1700 MIN 3.7 CFSM 5.99 IN 81.52 AC-FT 72590
WTR YR 1978 TOTAL 32637.2 MEAN 89.4 MAX 1700 MIN 4.3 CFSM 5.35 IN 72.70 AC-FT 64740

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure just upstream from Howard A. Hanson Dam on Green River, 1.4 mi (2.3 km) upstream from Bear Creek , 5.1 mi (8.2 km) southeast of Palmer, and at mile 64.5 (103.8 km).

DRAINAGE AREA.--220 mi^2 (570 km^2) approximately.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary long-distance water-stage recorder on right bank at same datum.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity 105,650 acre-ft (310 hm^3) between elevations 1,035 ft (315.5 m), invert of outlet tunnel, and 1,206 ft (367.6 m), top of spillway gates. Storage is not retained but is dissipated as soon after a flood as is possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Record of reservoir elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 61,325 acre-ft (75.6 hm^3) Dec. 5, 1975, elevation, 1,175.8 ft (358.38 m); minimum observed, 34 acre-ft (41,900 hm^3) Nov. 2, 1962, elevation, 1,037.6 ft (316.26 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 58,635 acre-ft (72.3 hm^3) Dec. 4, elevation, 1,173.6 ft (357.71 m); minimum observed, 220 acre-ft (0.271 hm^3) Dec. 23, elevation, 1,047.8 (319.37 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on photogrametric maps by Fairchild Aerial Surveys in 1961)

1,045	153	1,080	2,800	1,140	24,887
1,050	289	1,090	4,554	1,150	33,301
1,055	493	1,100	6,893	1,160	43,092
1,060	770	1,110	9,715	1,170	54,326
1,065	1,132	1,120	13,386	1,180	66,591
1,070	1,588	1,130	18,362		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 0900

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16940	1376	552	1132	903	822	1028	961	25649	24740	20402	16728
2	16060	488	29497	1028	889	770	876	643	25649	24519	20276	16470
3	15118	246	54919	953	842	770	616	809	25649	24224	20151	16211
4	14091	325	58635	1251	751	869	910	1268	25806	24007	19906	15909
5	13344	518	51637	1460	783	896	1132	1787	25884	23865	19845	15608
6	12596	849	41016	1660	1067	876	1199	2240	25884	23651	19723	15362
7	11928	1321	32575	1166	1140	862	1166	2510	25806	23437	19539	15118
8	11009	1059	22815	1116	939	1059	1067	2715	25649	23161	19300	14927
9	10163	696	13866	1578	727	998	925	3387	25649	22884	19181	14831
10	9285	1208	7464	1712	764	917	796	4147	25963	22612	19061	14735
11	8458	939	4128	1422	883	968	917	5143	26120	22343	18942	14642
12	7545	1043	4247	1100	869	1043	1051	6518	26198	21943	18826	14549
13	6543	962	4388	828	745	1051	1067	7869	26120	21747	18768	14457
14	5578	1124	8287	1067	789	1174	961	9499	25963	21681	18710	14317
15	4575	708	6742	1233	876	968	925	11774	25884	21484	18710	14181
16	3626	522	2888	1442	896	789	925	14181	25884	21419	18884	14181
17	2772	371	465	1251	842	809	1075	16573	25649	21615	18884	14364
18	2118	375	279	1051	946	990	1132	18594	25806	21615	18826	14735
19	1745	1216	503	883	1149	1242	932	20339	25649	21550	18768	14735
20	1460	1286	447	751	1321	1539	622	21681	25649	21550	18652	14549
21	1321	1043	426	975	1519	1376	573	23161	25649	21484	18536	14364
22	1199	720	340	1358	1303	1242	889	24445	25649	21419	18478	14181
23	1083	770	220	1629	1182	1166	1208	25039	25649	21355	18362	13911
24	998	739	869	1451	1225	903	1349	25344	25573	21291	18306	14410
25	1149	809	925	1251	1116	1132	1422	25573	25497	21163	18137	14457
26	1157	4347	815	1132	1051	1734	1442	25806	25420	21099	17969	14046
27	1036	3037	632	1051	910	2095	1519	25884	25344	21099	17746	13473
28	842	4031	1140	1051	745	1339	1967	26277	25192	20906	17529	12800
29	822	4492	1182	1036	---	917	1809	26277	25039	20778	17257	12555
30	1036	3679	1166	961	---	889	1422	25963	24887	20653	17045	12158
31	1854	---	1208	917	---	932	---	25806	---	20527	16781	---
MAX	16940	4492	58635	1712	1519	2095	1967	26277	26198	24740	20402	16728
MIN	822	246	220	751	727	770	573	643	24887	20527	16781	12158
††	1,069.6	1,064.9	1,065.3	1,062.1	1,060.4	1,063.2	1,064.9	1,141.1	1,139.9	1,133.5	1,127.0	1,116.3
†	1,548	1,124	1,157	910	796	990	1,124	25,728	24,813	20,464	16,728	11,889
‡	-15,709	-424	+33	-247	-114	+194	+134	+24,604	-915	-4,349	-3,736	-4,839

CAL YR 1977.................‡ -164
WTR YR 1978.................‡ -5,368

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.
NOTE.--Daily contents, in acre-feet, usually at 0900 hours.

12105900 GREEN RIVER BELOW HOWARD A. HANSON DAM, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi (1.1 km) upstream from Bear Creek, 0.7 mi (1.1 km) downstream from Howard A. Hanson Dam, 5.0 mi (8.0 km) southeast of Palmer, and at mile 63.8 (102.7 km).

DRAINAGE AREA.--221 mi^2 (572 km^2).

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 990 ft (302 m), from topographic map.

REMARKS.--Records excellent. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--18 years, 1,069 ft^3/s (30.27 m^3/s) 65.69 in/yr (1,669 mm/yr), 774,500 acre-ft/yr (955 hm^3/yr) adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft^3/s (346 m^3/s) Feb. 21, 1961, gage height, 14.40 ft (4.389 m); minimum, 87 ft^3/s (2.46 m^3/s) Dec. 29, 1961, gage height, 3.49 ft (1.064 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,000 ft^3/s (283 m^3/s) Dec. 4, gage height, 13.52 ft (4.121 m); minimum, 180 ft^3/s (5.10 m^3/s) July 5, gage height, 3.97 ft (1.210 m); minimum daily discharge, 219 ft^3/s (6.20 m^3/s) Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	935	2550	5030	545	609	681	1170	1350	735	414	243	355
2	925	3720	8210	529	685	633	1120	1040	676	411	243	387
3	915	2000	9290	455	800	569	845	865	676	411	241	387
4	816	1340	9500	472	775	553	753	739	676	411	241	384
5	754	989	9810	569	790	557	790	681	676	378	241	384
6	744	834	9130	758	910	553	800	676	676	414	241	381
7	781	1230	8770	835	1080	553	795	696	676	414	241	344
8	825	1390	8020	850	1070	637	775	533	621	414	229	319
9	812	1260	6510	915	940	672	744	434	553	414	219	319
10	799	2270	5140	1020	785	617	672	373	525	414	222	319
11	784	2480	4630	1030	735	597	654	347	521	411	224	319
12	814	1990	4660	970	730	609	676	361	557	358	222	317
13	822	1870	4800	780	649	617	712	375	577	272	222	317
14	811	3280	6290	633	585	699	685	393	577	250	222	317
15	790	3660	6800	663	601	721	654	408	545	250	222	317
16	754	2870	5390	762	605	645	658	420	521	250	222	317
17	668	2140	2960	805	541	589	685	434	521	250	243	319
18	519	1390	2230	771	514	569	810	441	521	257	260	420
19	445	1190	1800	735	537	605	950	448	462	253	260	504
20	381	1200	1490	633	557	805	920	455	417	248	260	504
21	344	1130	1340	569	717	955	840	462	417	243	260	504
22	335	910	1210	613	820	1050	825	593	417	243	260	658
23	328	819	980	735	805	1260	890	708	417	243	260	775
24	324	798	965	790	865	1210	910	681	417	243	290	775
25	421	2170	975	758	890	1100	965	681	417	245	311	850
26	515	5690	945	744	875	1220	1100	681	417	245	309	905
27	523	5110	690	690	840	1590	1260	685	414	243	309	900
28	460	5390	609	629	726	1670	1600	735	414	243	309	753
29	414	6660	633	625	---	1440	1670	985	414	243	309	649
30	445	6690	601	617	---	1340	1560	890	414	243	306	649
31	903	---	549	609	---	1260	---	825	---	243	306	---
TOTAL	20106	75020	129957	22109	21036	26576	27488	19393	15867	9571	7947	14648
MEAN	649	2501	4192	713	751	857	916	626	529	309	256	488
MAX	935	6690	9810	1030	1080	1670	1670	1350	735	414	311	905
MIN	324	798	549	455	514	553	654	347	414	243	219	317
AC-FT	39880	148800	257800	43850	41720	52710	54520	38470	31470	18980	15760	29050
†	-15,709	-424	+33	-247	-114	+194	+134	+24,604	-915	-4,349	-3,736	-4,839
MEAN‡	393	2,495	4,192	709	749	860	919	1,026	514	238	195	407
CFSM‡	1.78	11.3	19.0	3.21	3.39	3.89	4.16	4.64	2.33	1.08	0.882	1.84
IN.‡	2.05	12.59	21.87	3.70	3.53	4.49	4.64	5.35	2.59	1.24	1.02	2.05
AC-FT‡	24,170	148,400	257,800	43,600	41,610	52,900	54,650	63,070	30,560	14,630	12,020	24,210

CAL YR 1977: TOTAL 398,952 MEAN 1,093 MAX 9,810 MIN 242 AC-FT 791,300
DO.....: MEAN‡ 1,093 CFSM‡ 4.95 IN.‡ 67.12 AC-FT‡ 791,100
WTR YR 1978: TOTAL 389,718 MEAN 1,068 MAX 9,810 MIN 219 AC-FT 773,000
DO.....: MEAN‡ 1,060 CFSM‡ 4.80 IN.‡ 65.12 AC-FT‡ 767,600

† Change in contents, in acre-feet, in Howard A. Hanson Reservoir.
‡ Adjusted for change in contents, in Howard A. Hanson Reservoir.

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at city of Tacoma purification plant, 0.6 mi (1.0 km), downstream from diversion dam, 2 mi (3.2 km) southeast of Palmer, and at mile 60.4 (97.2 km).

DRAINAGE AREA.--231 mi^2 (598 km^2).

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 859.53 ft (261.985 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 4.1 mi (6.6 km) upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft^3/s (3.00 m^3/s) above station for municipal supply. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--15 years, 1,055 ft^3/s (29.88 m^3/s), 764,300 acre-ft/yr (942 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft^3/s (331 m^3/s) Dec. 3, 1977, gage height, 11.85 ft (3.612 m); minimum, 20 ft^3/s (0.566 m^3/s), part or all of each day Oct. 26, 27, Nov. 3, 6, 1974, gage height, 3.90 ft (1.216 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov 23, 1959, had a discharge of 27,800 ft^3/s (787 m^3/s), by slope-area measurement at site 0.6 mi (1.0 km) downstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,700 ft^3/s (331 m^3/s) Dec. 3, gage height, 11.85 ft (3.612 m); minimum, 72 ft^3/s (2.04 m^3/s) July 5, gage height, 4.93 ft (1.503 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	946	2570	5700	591	514	598	1090	1270	633	300	122	243
2	930	4460	10200	605	598	549	1040	992	570	290	122	270
3	1010	2210	10700	476	759	488	808	822	570	290	122	266
4	930	1450	10600	470	752	458	703	696	563	290	126	266
5	870	1070	10900	563	759	458	731	633	563	257	122	266
6	855	860	10100	738	857	458	738	612	556	290	126	270
7	849	1230	9540	850	992	476	724	633	563	290	126	234
8	816	1440	8540	906	1010	570	696	482	507	285	113	209
9	805	1320	6670	960	892	612	675	374	452	285	104	218
10	793	2340	5260	1030	731	549	598	325	416	295	107	218
11	784	2660	4790	1030	668	521	570	305	416	300	104	222
12	816	2030	4710	952	668	528	591	295	446	261	110	214
13	835	1940	4860	773	598	535	626	310	464	178	107	209
14	819	3460	6280	619	514	612	605	336	464	149	107	209
15	799	4160	6890	647	514	640	570	358	446	139	129	226
16	764	3130	5420	731	514	570	591	386	422	142	113	214
17	674	2260	2960	759	464	500	619	392	422	139	129	248
18	499	1490	2200	724	428	476	759	386	410	145	145	330
19	405	1210	1790	689	458	514	968	374	358	139	149	404
20	337	1230	1530	584	476	682	952	374	315	139	142	404
21	291	1160	1370	528	598	850	815	374	305	139	142	392
22	284	958	1220	591	731	920	815	476	305	139	152	563
23	278	826	968	696	717	1120	885	612	300	139	149	836
24	272	810	913	738	766	1140	878	577	305	139	170	766
25	384	2280	920	703	794	1020	913	570	305	139	193	780
26	521	6870	899	696	794	1130	1020	570	300	139	193	808
27	522	6130	682	633	759	1410	1160	591	300	129	189	794
28	455	6440	563	584	661	1540	1480	640	295	126	189	668
29	388	7830	710	577	---	1340	1580	864	295	122	189	563
30	475	7880	675	542	---	1250	1450	787	295	122	189	563
31	877	---	598	528	---	1190	---	717	---	119	197	---
TOTAL	20283	83704	139158	21513	18986	23704	25650	17133	12561	6055	4377	11873
MEAN	654	2790	4489	694	678	765	855	553	419	195	141	396
MAX	1010	7880	10900	1030	1010	1540	1580	1270	633	300	197	836
MIN	272	810	563	470	428	458	570	295	295	119	104	209
AC-FT	40230	166000	276000	42670	37660	47020	50880	33980	24910	12010	8680	23550

CAL YR 1977 TOTAL 405203 MEAN 1110 MAX 10900 MIN 125 AC-FT 803700
WTR YR 1978 TOTAL 384997 MEAN 1055 MAX 10900 MIN 104 AC-FT 763600

12107000 GREEN RIVER AT KANASKAT, WA

LOCATION.--Lat 47°19'10", long 121°53'33", in NE¼SE¼ sec.10, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, at county bridge at Kanasket, 4.5 mi (7.2 km) downstream from gaging station (12106700) and 7 mi (11 km) downstream from North Fork.

DRAINAGE AREA.--240 mi^2 (622 km^2).

PERIOD OF RECORD.--Water years 1950-57, 1959, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: August 1950 to September 1957.
SUSPENDED SEDIMENT: October 1952 to September 1957.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good. Records prior to 1975 published as 12106500 "Green River near Palmer."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
03...	1010	1030	60	6.9	11.8	10	1
NOV							
28...	1045	5880	41	7.1	6.3	40	12
DEC							
19...	1050	1810	45	7.2	4.5	40	60
JAN , 1978							
16...	1005	640	51	7.3	5.2	10	5
FEB							
21...	1045	476	49	7.8	7.6	40	1
MAR							
06...	0955	452	51	7.5	5.2	10	1
APR							
03...	0955	968	47	7.2	6.2	10	6
MAY							
01...	1010	1320	49	6.9	7.8	10	3
JUN							
19...	0915	410	52	7.4	12.0	10	1
JUL							
17...	1000	132	54	7.2	13.8	15	1
AUG							
07...	1105	119	60	8.1	17.6	0	3
SEP							
18...	1215	239	56	7.6	12.2	10	1

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
03...	12.2	.05	.05	.01	.00	.00
NOV						
28...	13.4	.19	.10	.05	.01	.03
DEC						
19...	12.4	.14	.08	.05	.01	.03
JAN , 1978						
16...	12.2	.14	.03	.02	.01	.03
FEB						
21...	12.8	.08	.06	.01	--	--
MAR						
06...	12.9	.07	.03	.02	.01	.03
APR						
03...	11.7	.04	.03	.03	.00	.00
MAY						
01...	11.7	.04	.03	.02	.01	.03
JUN						
19...	9.9	.06	.06	.02	.01	.03
JUL						
17...	11.8	.04	.01	.01	.00	.00
AUG						
07...	11.1	.05	.08	.02	.02	.06
SEP						
18...	10.4	.08	.04	.02	.00	.00

12107950 NORTH FORK NEWAUKUM CREEK NEAR ENUMCLAW, WA

LOCATION.--Lat 47°14'06", long 121°55'42", in NW¼SW¼ sec.9, T.20 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi (4.7 km) northeast of Enumclaw.

DRAINAGE AREA.--1.93 mi² (5.0 km²).

PERIOD OF RECORD.--July 1977 to July 1978 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m) from topographic map.

REMARKS.--Records good except those for discharges less than 1.0 ft³/s (0.028 m³/s) and those for period of no gage-height record Jan. 12 to Feb. 14, which are fair. No known regulation or diversion above station.

EXTREMES FOR CURRENT PERIOD.--July to September 1977: Maximum discharge during period, 34 ft³/s (0.96 m³/s) Aug. 26, gage height, 8.74 ft (2.664 m) from rating extended above 18 ft³/s (0.51 m³/s); minimum, 0.02 ft³/s (0.001 m³/s) Aug. 17, 18, gage height, 7.71 ft (2.350 m).

October 1977 to July 1978: Maximum discharge during period, 32 ft³/s (0.91 m³/s) Dec. 2, gage height, 8.72 ft (2.658 m) from rating curve extended as explained above; minimum, 0.66 ft³/s (0.019 m³/s) July 25, 26, 29, 30, 31, gage height, 7.87 ft (2.399 m).

DISCHARGE, IN CUBIC FEET PER SECOND, JULY TO SEPTEMBER 1977

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	---	.31	4.2	9	.91	.09	1.9	17	.77	.05	1.0	25	.40	2.4	4.7
2	---	.27	3.5	10	.85	.08	1.7	18	.69	.05	1.0	26	.40	15	3.7
3	---	.27	3.3	11	.97	.09	1.5	19	.69	.05	1.2	27	.35	5.9	3.0
4	---	.27	4.2	12	1.0	.08	1.3	20	.53	.05	1.5	28	.40	3.9	3.1
5	---	.24	3.4	13	.93	.15	1.2	21	.53	.06	4.2	29	.35	4.4	3.9
6	---	.21	2.6	14	.85	.24	1.1	22	.45	.06	2.8	30	.31	11	3.5
7	.90	.18	2.3	15	.77	.15	1.1	23	.40	.53	4.2	31	.31	6.0	---
8	.89	.15	2.1	16	.77	.08	1.1	24	.40	3.4	6.2	--	---	---	---
TOTAL													---	55.71	80.5
MEAN													---	1.80	2.68
MAX													---	15	6.2
MIN													---	.05	1.0
CFSM													---	.93	1.39
IN													---	1.07	1.55
AC-FT													---	111	160

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1977 to JULY 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	5.8	10	3.3	5.5	3.9	3.3	5.4	2.0	1.3		
2	2.7	8.0	25	3.4	6.5	3.5	3.0	4.3	1.9	1.2		
3	2.4	5.2	21	4.0	6.4	3.4	2.8	4.3	1.8	1.3		
4	2.1	4.2	16	4.4	5.2	3.4	4.6	4.1	1.6	1.2		
5	2.0	3.6	14	4.6	5.1	3.1	4.7	3.9	1.5	1.2		
6	2.1	3.0	15	4.6	6.5	2.9	4.1	3.5	1.4	1.0		
7	2.2	2.8	14	5.2	4.9	3.3	3.6	3.1	1.3	1.0		
8	1.9	2.5	12	7.9	4.9	3.1	3.2	3.0	1.3	1.0		
9	1.8	2.5	11	6.8	4.4	2.9	3.0	2.8	2.5	.99		
10	1.6	4.0	13	5.3	4.1	2.8	2.7	3.0	2.8	1.0		
11	1.5	3.8	18	4.7	3.8	2.9	2.5	3.9	2.6	1.0		
12	1.4	3.4	16	5.4	3.4	3.2	2.3	4.1	2.4	.95		
13	1.6	3.6	18	5.9	3.2	3.4	2.2	4.5	2.7	.91		
14	1.3	4.0	19	6.4	3.0	3.3	2.2	4.7	2.6	.85		
15	1.2	3.8	17	5.6	3.4	3.1	2.4	4.9	3.7	.82		
16	1.5	4.6	15	4.9	3.1	3.0	11	4.7	3.7	1.5		
17	1.3	4.2	12	4.5	3.0	2.8	10	4.2	3.2	1.3		
18	1.3	4.0	9.9	4.3	3.1	2.7	9.2	3.8	2.8	1.1		
19	1.2	3.8	8.2	4.1	3.2	2.5	11	3.4	2.5	1.0		
20	1.2	3.4	7.2	3.9	3.1	2.4	9.5	3.1	2.2	.95		
21	1.1	3.0	6.3	7.0	2.9	2.3	8.3	2.9	2.1	.86		
22	1.1	3.0	5.6	6.0	2.8	2.1	10	2.7	1.9	.81		
23	1.2	3.4	4.9	4.5	3.1	2.3	11	2.6	1.7	.74		
24	1.5	4.0	4.6	4.2	3.0	2.3	8.7	2.4	1.6	.72		
25	3.2	13	4.2	4.1	4.0	2.5	7.2	2.2	1.6	.69		
26	3.4	12	4.0	4.8	4.8	2.5	6.9	2.2	1.6	.82		
27	2.6	11	3.7	4.3	4.3	2.3	9.6	2.7	1.5	.93		
28	2.2	14	3.5	4.3	4.1	2.8	8.6	2.8	1.4	.76		
29	2.1	15	3.6	4.5	---	2.7	8.0	2.7	1.4	.71		
30	3.4	10	4.2	4.2	---	3.6	7.4	2.4	1.5	.68		
31	3.4	---	3.6	4.8	---	3.6	---	2.2	---	.68		
TOTAL	60.5	168.6	339.5	151.9	114.8	90.6	183.0	106.5	62.8	29.97		
MEAN	1.95	5.62	11.0	4.90	4.10	2.92	6.10	3.44	2.09	.97		
MAX	3.4	15	25	7.9	6.5	3.9	11	5.4	3.7	1.5		
MIN	1.1	2.5	3.5	3.3	2.8	2.1	2.2	2.2	1.3	.68		
CFSM	1.01	2.91	5.70	2.54	2.12	1.51	3.16	1.78	1.08	.50		
IN.	1.17	3.25	6.54	2.93	2.21	1.75	3.53	2.05	1.21	.58		
AC-FT	120	334	673	301	228	180	363	211	125	59		

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi (0.2 km) downstream from West Whitney Hill bridge, 0.8 mi (1.3 km) upstream from mouth, and 3.5 mi (5.6 km) southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi² (71.0 km²).

PERIOD OF RECORD.--July 1944 to November 1950, water year 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WRD Wash. 1974: 1973(M), WDR WA-76-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records fair. Many small diversions above station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--32 years (water years 1945-50, 1953-78), 62.4 ft³/s (1.767 m³/s, 30.93 in/yr (786 mm/yr), 45,210 acre-ft/yr (55.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft³/s (51.5 m³/s) probably Feb. 17, 1949, gage height, 3.54 ft (1.079 m), from recorded range in stage, from rating curve extended above 600 ft³/s (17.0 m³/s); minimum, 8.0 ft³/s (0.23 m³/s) Oct. 13, 14, 1952; minimum gage height, 0.62 ft (0.189 m) Aug. 26, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s (12.7 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 10	2400	*370	10.5	*2.39	0.728

Minimum discharge, 16 ft³/s (0.45 m³/s) all or part of each day Oct. 21-23, Aug. 4-12, 29, 30, minimum gage height, 1.05 ft (0.320 m) Aug. 7-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	61	93	58	89	65	44	45	30	23	17	26
2	25	85	248	52	120	56	42	42	29	23	17	23
3	23	53	182	72	112	53	41	41	29	23	17	21
4	21	43	142	91	81	61	49	43	28	23	16	22
5	19	39	102	79	79	55	52	42	27	23	16	29
6	19	35	199	70	102	52	44	40	26	23	16	30
7	23	37	166	77	77	68	41	38	26	22	16	31
8	20	33	112	115	75	72	38	36	26	22	16	25
9	20	32	95	77	68	58	37	36	32	22	16	30
10	19	53	172	85	65	53	35	36	38	22	16	29
11	18	49	294	89	60	52	35	47	36	22	16	26
12	18	47	241	85	58	55	33	49	31	22	20	24
13	19	53	273	81	55	53	33	52	36	21	19	22
14	18	64	261	87	53	52	33	60	38	20	17	21
15	18	56	213	77	65	47	34	68	44	19	21	21
16	18	63	182	68	60	46	74	63	39	24	18	20
17	17	51	130	66	55	43	90	52	34	24	17	41
18	17	47	110	63	56	43	73	45	32	21	17	36
19	17	44	93	61	61	43	83	42	30	20	18	28
20	17	39	83	56	56	42	102	37	28	20	17	25
21	17	36	77	127	52	41	85	35	27	19	17	26
22	16	34	72	95	50	39	127	35	27	19	19	32
23	19	35	68	68	52	44	107	34	26	18	19	139
24	20	65	65	60	53	46	66	33	26	18	24	84
25	40	162	63	60	93	52	53	32	26	18	21	54
26	45	149	60	73	105	53	55	33	25	19	19	41
27	31	125	56	63	72	46	79	37	25	22	17	35
28	26	125	55	63	68	60	63	40	23	19	17	36
29	30	160	66	68	---	55	53	36	23	18	16	33
30	43	92	91	61	---	53	49	34	24	17	17	31
31	48	---	66	68	---	50	---	32	---	17	19	---
TOTAL	729	1967	4130	2315	1992	1608	1750	1295	891	643	548	1041
MEAN	23.5	65.6	133	74.7	71.1	51.9	58.3	41.8	29.7	20.7	17.7	34.7
MAX	48	162	294	127	120	72	127	68	44	24	24	139
MIN	16	32	55	52	50	39	33	32	23	17	16	20
CFSM	.86	2.39	4.85	2.73	2.60	1.89	2.13	1.53	1.08	.76	.65	1.27
IN.	.99	2.67	5.61	3.14	2.70	2.18	2.38	1.76	1.21	.87	.74	1.41
AC-FT	1450	3900	8190	4590	3950	3190	3470	2570	1770	1280	1090	2060

CAL YR 1977 TOTAL 16771 MEAN 45.9 MAX 294 MIN 13 CFSM 1.68 IN 22.77 AC-FT 33270
WTR YR 1978 TOTAL 18909 MEAN 51.8 MAX 294 MIN 16 CFSM 1.89 IN 25.67 AC-FT 37510

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi (0.3 km) upstream from fish hatchery, 2.7 mi (4.3 km) east of Auburn, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--66.7 mi² (172.8 km²), excludes 3.67 mi² (9.51 km²) in vicinity of Youngs Lake, flow from which has been diverted to Cedar River since about 1935.

PERIOD OF RECORD.--August 1960 to current year. Chemical analyses October 1962 to September 1971, at site 1.0 mi (1.6 km) upstream from gaging station.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (21 m), from topographic map.

REMARKS.--Records good. City of Seattle diverts probably less than 2 ft³/s (0.057 m³/s) from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966 fish hatchery diverted up to 19 ft³/s (0.538 m³/s) 0.5 mi (0.8 km) above station, which was returned below the station.

AVERAGE DISCHARGE.--18 years, 124 ft³/s (3.512 m³/s), 89,840 acre-ft/yr (111 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 1,090 ft³/s (30.9 m³/s) Feb. 28, 1972, gage height, 6.17 ft (1.881 m); minimum, 11 ft³/s (0.312 m³/s) Sept. 5, 1963, gage height, 1.07 ft (0.326 m).

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 11	1400	560	15.9	4.60	1.402	Dec. 16	0400	*734	20.8	*5.18	1.579

Minimum discharge, 29 ft³/s (0.821 m³/s) Aug. 9, 10; minimum gage height, 1.88 ft (0.573 m) Oct. 12, 18, 19, 20, 21, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	61	208	161	167	159	117	167	73	45	36	42
2	38	86	269	150	255	149	114	156	69	45	36	48
3	37	73	253	188	275	140	118	149	67	45	34	45
4	36	60	220	255	240	144	125	146	64	45	33	44
5	36	58	197	259	220	139	147	141	63	45	33	45
6	35	55	251	233	241	133	137	131	61	43	32	45
7	37	56	255	229	227	159	123	124	60	44	31	42
8	36	54	215	322	247	171	114	119	60	42	31	39
9	36	54	195	308	230	151	110	115	68	42	30	47
10	35	69	293	273	211	140	106	115	69	42	30	58
11	34	69	535	249	193	140	103	126	67	43	31	50
12	34	70	522	233	180	200	99	122	66	42	35	44
13	38	72	552	217	169	184	98	131	70	40	34	40
14	36	97	644	217	163	161	98	135	74	39	32	39
15	35	95	647	204	193	146	100	156	77	38	35	38
16	35	91	707	186	177	137	223	140	70	44	33	37
17	35	82	599	172	165	130	229	123	64	45	32	48
18	34	82	517	163	164	124	185	111	61	42	31	45
19	34	83	450	156	163	120	192	101	58	41	32	39
20	34	74	392	150	156	115	236	95	55	39	32	38
21	34	69	344	218	149	112	215	88	52	37	32	40
22	34	68	306	231	143	109	249	86	50	36	33	60
23	35	73	278	188	147	114	265	84	49	35	33	218
24	40	107	253	167	151	124	227	83	48	34	41	158
25	67	235	237	159	178	138	201	82	48	35	41	92
26	66	337	218	172	215	148	190	83	48	38	38	69
27	53	269	202	167	190	130	213	87	45	50	35	62
28	46	227	190	161	173	138	218	91	45	43	34	59
29	51	249	200	158	---	136	204	90	45	37	33	54
30	61	208	202	148	---	128	182	83	45	35	32	52
31	58	---	179	150	---	124	---	78	---	34	35	---
TOTAL	1259	3283	10530	6244	5382	4343	4938	3538	1791	1265	1040	1737
MEAN	40.6	109	340	201	192	140	165	114	59.7	40.8	33.5	57.9
MAX	67	337	707	322	275	200	265	167	77	50	41	218
MIN	34	54	179	148	143	109	98	78	45	34	30	37
AC-FT	2500	6510	20890	12380	10680	8610	9790	7020	3550	2510	2060	3450

CAL YR 1977 TOTAL 33896 MEAN 92.9 MAX 707 MIN 25 AC-FT 67230
WTR YR 1978 TOTAL 45350 MEAN 124 MAX 707 MIN 30 AC-FT 89950

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi (1.9 km) east of Auburn, 1.8 mi (2.9 km) downstream from Big Soos Creek, and at mile 32.0 (51.5 km).

DRAINAGE AREA.--399 mi² (1,033 km²), excludes 3.67 mi² (9.51 km²) in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 32.5 mi (52.3 km) above station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft³/s (3.00 m³/s) from river at headworks near Palmer, 29 mi (46.7 km) above station, for municipal use. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--42 years, 1,371 ft³/s (38.83 m³/s), 993,300 acre-ft/yr (1,225 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s (796 m³/s) Nov. 23, 1959, elevation, 69.75 ft (21.260 m); minimum, 81 ft³/s (2.29 m³/s) Sept. 23, 1952; minimum elevation, 53.28 ft (16.240 m) Aug. 13, 17, 18, 19, 20, 21, 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,920 ft³/s (281 m³/s) Dec. 3, elevation, 62.51 ft (19.053 m); minimum daily, 280 ft³/s (7.93 m³/s) Aug. 10, may have been lower during period of no gage-height record.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1060	1890	5310	1010	966	973	1450	1890	991	486	320	356
2	1030	4280	8460	973	1100	924	1410	1540	854	481	315	420
3	1050	2670	9540	1020	1350	840	1270	1330	841	481	310	415
4	1050	1760	9450	1000	1300	810	1040	1140	828	481	310	415
5	907	1350	9750	1060	1270	792	1040	1050	822	470	305	431
6	903	959	9640	1180	1410	774	1030	977	815	448	300	437
7	903	1130	9130	1430	1530	840	1000	970	809	464	300	431
8	875	1530	8610	1620	1610	938	959	942	802	459	295	375
9	861	1410	7230	1650	1510	980	924	711	757	464	290	400
10	840	2030	6220	1640	1280	931	868	687	718	464	280	415
11	816	2960	6120	1660	1140	868	786	627	693	508	285	395
12	822	2210	6000	1570	1120	952	798	657	681	514	295	380
13	875	2180	6200	1450	1070	924	810	681	763	410	300	365
14	840	2830	7190	1180	931	896	840	731	757	390	290	360
15	828	4300	8000	1160	938	959	792	802	770	380	300	370
16	804	3430	7220	1170	910	896	1080	841	705	400	310	375
17	756	2640	4830	1240	861	816	1080	815	681	385	300	420
18	618	2000	3560	1180	792	756	1040	789	663	365	295	442
19	474	1400	2950	1110	810	768	1320	763	645	360	312	561
20	415	1410	2530	1060	810	840	1520	744	543	360	312	555
21	340	1340	2250	1100	840	1090	1370	724	525	345	312	561
22	315	1200	2030	1160	1050	1140	1380	731	525	340	312	663
23	315	1020	1720	1130	1060	1350	1520	970	514	335	312	1370
24	315	1040	1540	1190	1070	1580	1420	928	503	325	312	1250
25	385	1860	1540	1160	1230	1380	1330	921	508	330	329	1080
26	576	5800	1480	1160	1290	1510	1410	914	503	335	320	1100
27	594	6090	1320	1120	1180	1680	1620	935	497	340	312	1060
28	552	5690	1040	1040	1100	2040	1920	956	486	340	312	1010
29	468	6680	1210	1030	---	1850	2160	1150	486	325	312	796
30	540	7280	1180	987	---	1640	2040	1170	486	315	312	776
31	672	---	1050	931	---	1620	---	1030	---	320	320	---
TOTAL	21799	82369	154300	37371	31528	34357	37227	29116	20177	12420	9489	17984
MEAN	703	2746	4977	1206	1126	1108	1241	939	673	401	306	599
MAX	1060	7280	9750	1660	1610	2040	2160	1890	991	514	329	1370
MIN	315	959	1040	931	792	756	786	627	486	315	280	356
AC-FT	43240	163400	306100	74130	62540	68150	73840	57750	40020	24640	18820	35670

CAL YR 1977 TOTAL 479715 MEAN 1314 MAX 9750 MIN 220 AC-FT 951500
WTR YR 1978 TOTAL 488137 MEAN 1337 MAX 9750 MIN 280 AC-FT 968200

NOTE.--No gage-height record July 14 to Aug. 18.

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1952 to current year.

INSTRUMENTATION.--Temperature recorder since March 1952.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C July 28, 1958; minimum, 0.5°C Feb. 16, 17, 1956, Dec. 18-21, 1964, Nov. 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 22.0°C July 22, 23, Aug. 8, 9; minimum, 0.5°C Nov. 21, 22.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	12.0	12.5	9.0	8.0	8.5	6.5	5.5	6.0	2.5	1.5	2.0
2	12.5	11.0	11.5	8.0	7.0	7.5	7.5	7.0	7.5	2.5	1.0	1.5
3	12.5	10.5	11.5	7.0	6.0	6.5	7.5	7.0	7.0	3.5	2.5	3.0
4	12.0	10.5	11.5	7.0	6.5	6.5	7.0	6.5	7.0	5.0	3.5	4.5
5	12.0	10.5	11.5	7.5	6.5	7.0	6.5	6.0	6.5	5.0	4.5	4.5
6	11.5	10.5	11.0	8.0	7.0	7.5	6.5	6.0	6.5	4.5	4.5	4.5
7	13.0	10.5	11.5	8.0	7.0	7.5	6.0	5.0	5.5	5.0	4.5	4.5
8	11.5	10.5	11.0	6.5	5.5	6.0	5.0	4.5	5.0	5.5	5.0	5.5
9	12.0	11.0	11.5	6.5	5.5	6.0	4.5	4.5	4.5	6.0	5.0	5.5
10	11.5	10.0	11.0	7.5	6.0	7.0	5.0	4.5	4.5	6.0	5.5	6.0
11	12.0	10.5	11.0	7.5	7.0	7.0	6.0	5.0	5.5	6.0	5.5	6.0
12	12.0	10.5	11.0	7.5	7.0	7.0	6.0	6.0	6.0	6.5	5.5	6.0
13	12.5	11.0	12.0	7.5	7.0	7.0	6.5	6.0	6.5	6.0	5.5	5.5
14	11.0	10.0	10.5	7.5	7.0	7.5	7.0	6.5	6.5	6.5	5.5	6.0
15	12.5	10.5	11.5	7.0	6.5	7.0	6.5	6.0	6.5	7.0	6.5	6.5
16	12.5	11.0	12.0	7.0	6.0	6.5	6.0	5.5	5.5	6.5	6.0	6.0
17	10.5	10.0	10.5	6.0	5.5	6.0	5.5	5.5	5.5	6.5	5.5	6.0
18	10.5	10.0	10.0	5.5	4.5	5.0	6.0	5.5	5.5	6.0	5.0	5.5
19	11.0	10.0	10.5	4.5	3.5	4.0	5.5	5.0	5.0	7.0	6.0	6.5
20	10.0	9.5	9.5	3.0	1.5	2.5	5.0	4.0	4.5	7.5	6.5	7.0
21	11.0	8.5	9.5	1.5	.5	1.0	4.5	4.0	4.5	7.0	7.0	7.0
22	11.5	9.5	10.5	1.5	.5	1.0	4.5	4.0	4.5	7.0	5.5	6.5
23	12.5	11.0	11.5	3.0	1.5	2.5	4.5	4.0	4.5	5.5	5.0	5.0
24	11.0	9.5	10.0	4.0	3.0	3.5	5.5	5.0	5.0	5.5	4.5	5.0
25	10.5	9.5	10.0	6.0	4.0	5.0	5.5	5.0	5.5	5.5	5.0	5.0
26	10.0	8.5	9.5	6.0	5.5	5.5	5.0	4.0	4.5	6.0	5.5	6.0
27	9.0	7.5	8.5	6.0	6.0	6.0	4.0	3.0	3.0	5.5	5.0	5.5
28	9.0	7.5	8.0	6.5	6.0	6.0	4.0	3.0	3.5	6.0	5.5	6.0
29	9.5	8.5	9.0	7.0	6.5	6.5	4.5	4.0	4.5	6.0	6.0	6.0
30	9.5	8.5	9.0	6.0	5.5	6.0	4.5	4.0	4.5	6.0	5.0	5.5
31	8.5	7.5	8.0	---	---	---	4.0	2.5	3.5	5.5	5.0	5.5
MONTH	13.5	7.5	10.5	9.0	.5	6.0	7.5	2.5	5.5	7.5	1.0	5.5

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.0	5.5	6.0	5.0	5.5	9.0	8.0	8.5	11.5	8.5	9.5
2	6.0	5.5	5.5	5.5	4.5	5.0	8.5	7.0	7.5	11.0	9.0	10.0
3	7.0	5.5	6.0	5.5	4.0	4.5	10.0	6.5	8.5	11.0	8.5	9.5
4	7.0	6.0	6.5	5.5	4.5	5.0	9.5	8.0	9.0	11.0	8.0	9.5
5	8.0	7.0	7.5	7.0	5.0	5.5	9.5	7.5	8.5	11.0	8.0	9.0
6	8.0	7.0	7.5	7.0	6.0	6.5	9.0	6.5	7.5	12.5	8.0	10.0
7	7.0	6.5	7.0	7.5	7.0	7.0	10.0	6.5	8.0	13.0	9.5	11.5
8	7.0	6.0	6.5	8.5	6.5	7.5	10.0	8.0	9.0	13.5	10.5	12.0
9	7.0	6.0	6.5	8.5	7.0	7.5	11.5	7.5	9.5	12.0	11.0	11.5
10	6.0	5.5	5.5	8.0	6.5	7.0	12.0	8.5	10.0	11.0	9.5	10.5
11	6.0	5.0	5.5	8.0	7.0	7.0	11.5	9.0	10.0	12.0	9.5	10.5
12	5.0	4.0	4.5	7.5	6.5	7.0	11.5	8.5	10.0	12.0	9.5	10.5
13	5.5	4.5	5.0	7.0	6.5	7.0	10.0	8.5	9.5	11.5	10.0	10.5
14	6.0	4.5	5.0	7.5	6.0	6.5	9.5	8.5	9.0	10.5	9.5	10.5
15	6.0	5.5	5.5	8.0	5.5	6.5	11.0	7.5	9.0	---	---	---
16	6.0	5.0	5.5	9.0	6.5	7.5	9.5	7.5	8.0	---	---	---
17	7.0	5.5	6.0	9.5	7.0	8.0	8.5	7.0	7.5	---	---	---
18	7.0	6.5	7.0	10.0	7.5	8.5	10.5	8.0	9.0	---	---	---
19	8.5	7.0	7.5	9.5	7.5	8.5	10.5	8.5	9.5	---	---	---
20	8.0	7.5	7.5	10.5	7.5	9.0	10.5	8.0	9.0	---	---	---
21	9.0	7.5	8.0	10.5	7.5	9.0	9.0	7.5	8.0	---	---	---
22	8.0	7.0	7.5	10.5	8.0	9.0	8.5	7.0	7.5	---	---	---
23	8.0	7.5	7.5	9.5	8.0	9.0	10.5	7.0	8.5	---	---	---
24	8.0	7.0	7.0	9.0	7.5	8.0	12.0	8.5	10.0	---	---	---
25	7.0	6.5	6.5	8.0	8.0	8.0	11.5	9.5	10.5	---	---	---
26	7.0	6.0	6.5	9.0	7.5	8.5	11.0	9.5	10.0	---	---	---
27	6.5	5.0	6.0	9.5	8.0	8.5	10.0	9.0	9.5	---	---	---
28	6.5	5.5	6.0	9.0	8.0	8.5	9.5	8.5	9.0	---	---	---
29	---	---	---	9.0	8.0	8.5	10.5	8.0	9.0	---	---	---
30	---	---	---	9.0	8.0	8.5	11.0	8.0	9.0	---	---	---
31	---	---	---	9.5	7.0	8.0	---	---	---	---	---	---
MONTH	9.0	4.0	6.5	10.5	4.0	7.5	12.0	6.5	9.0	13.5	8.0	10.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	17.5	14.5	16.0	17.0	15.0	16.0	16.5	15.0	16.0
2	---	---	---	16.0	14.0	15.0	18.0	15.0	16.0	17.5	15.0	16.0
3	---	---	---	14.5	13.5	14.0	20.5	16.0	18.0	16.5	15.0	15.5
4	---	---	---	14.0	12.5	13.0	20.5	17.0	18.5	15.0	14.0	14.5
5	---	---	---	15.5	12.5	14.0	20.5	16.0	18.5	15.0	14.0	14.5
6	---	---	---	19.0	13.0	15.5	20.5	16.0	18.5	15.5	13.5	14.5
7	---	---	---	17.5	14.5	16.0	21.0	16.5	19.0	15.5	13.0	14.5
8	---	---	---	16.5	14.5	15.0	22.0	17.5	19.5	14.5	13.0	14.0
9	14.0	12.5	13.5	16.0	13.5	14.5	22.0	18.5	20.0	14.5	13.5	14.0
10	14.0	11.5	12.5	15.0	13.0	14.0	20.5	17.0	18.0	15.5	13.5	14.5
11	16.0	11.5	13.5	17.0	13.0	14.5	17.5	16.0	16.5	15.0	13.0	14.0
12	15.0	13.0	13.5	19.0	13.0	16.0	18.0	15.0	16.5	15.5	13.0	14.0
13	14.5	12.0	13.0	20.5	14.5	17.5	18.0	15.0	16.5	14.5	12.5	13.5
14	14.0	11.5	12.5	20.0	15.0	17.5	17.0	15.0	15.5	14.5	12.5	13.5
15	14.5	12.0	13.0	19.0	16.0	17.0	17.5	14.5	16.0	15.5	13.5	14.5
16	14.0	12.0	13.0	17.0	14.5	15.0	16.0	14.5	15.0	15.0	12.5	13.5
17	17.5	11.5	14.5	17.0	13.5	15.0	17.5	14.0	15.5	14.0	12.0	12.5
18	16.5	13.5	15.0	16.5	13.5	15.0	16.5	15.0	16.0	13.0	10.5	12.0
19	18.0	13.5	15.5	17.5	14.0	15.5	16.0	15.0	15.5	14.0	10.5	12.5
20	19.0	13.5	16.5	20.5	15.0	17.5	16.0	14.5	15.0	13.0	12.0	12.5
21	17.0	14.0	15.0	21.0	16.0	18.5	17.5	14.5	16.0	13.5	12.5	13.0
22	17.0	12.5	14.5	22.0	17.5	19.5	17.0	15.0	15.5	13.0	12.5	13.0
23	16.5	13.0	15.0	22.0	18.0	20.0	15.0	13.5	14.5	13.5	12.5	13.0
24	15.5	13.5	14.5	20.0	17.0	18.5	15.5	14.0	15.0	13.5	12.5	13.0
25	14.5	13.0	13.5	21.5	16.5	19.0	16.5	14.0	15.5	13.5	13.0	13.5
26	17.5	12.0	14.5	20.5	17.0	18.0	18.0	13.5	16.0	14.0	13.0	13.5
27	19.5	13.5	16.5	18.0	15.5	16.5	17.0	14.5	16.0	15.0	13.0	14.0
28	21.0	15.0	18.0	19.5	15.0	17.0	19.0	15.0	17.0	13.5	12.5	13.0
29	19.0	15.0	16.5	20.5	15.5	18.0	19.5	15.5	17.5	15.0	13.0	14.0
30	17.0	13.5	15.0	20.5	16.5	18.5	18.5	16.5	17.5	14.5	13.0	14.0
31	---	---	---	19.5	16.0	17.5	18.0	16.0	16.5	---	---	---
MONTH	21.0	11.5	14.5	22.0	12.5	16.5	22.0	13.5	16.5	17.5	10.5	14.0
YEAR	22.0	.5	10.0									

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'55", long 122°14'48", in NW¼SW¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on right bank under highway bridge 0.6 mi (1.0 km) southeast of Tukwila, 1.4 mi (2.3 km) upstream from Black River, and at mile 12.4 (20.0 km).

DRAINAGE AREA.--440 mi^2 (1,140 km^2).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October 1967 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records good. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft^3/s (3.00 m^3/s) from river at headworks near Palmer, 49 mi (78.8 km) above station, for municipal use. Minor diversions and regulation on upstream tributaries. River stages are affected daily by backwater during high tide.

AVERAGE DISCHARGE.--18 years, 1,549 ft^3/s (43.87 m^3/s), 1,122,000 acre-ft/yr (1,380 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft^3/s (343 m^3/s) Jan. 31, 1965, elevation, 21.70 ft (6.614 m); minimum recorded, 195 ft^3/s (5.52 m^3/s) Sept. 14, 15, 1961; minimum observed elevation, 2.26 ft (0.689 m) Oct. 24, 1974, but may have been less during period of no gage-height record Oct. 14-27, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959 reached a stage of 22.63 ft (6.898 m), present datum from gage-height record of stages above 14.2 ft (4.33 m), discharge, 13,200 ft^3/s (374 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,700 ft^3/s (303 m^3/s) Dec. 6, elevation, 20.28 ft (6.181 m); minimum daily, 321 ft^3/s (9.09 m^3/s) Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	1270	6160	1460	1280	1200	1530	1870	1040	570	365	438
2	1020	3810	7920	1390	1490	1140	1490	1630	941	555	365	498
3	1010	3100	9840	1480	1630	1080	1430	1420	893	557	362	500
4	1080	1970	10000	1550	1620	1030	1250	1270	884	560	352	503
5	964	1550	10300	1590	1580	995	1230	1160	881	560	343	515
6	932	1230	10500	1550	1650	981	1180	1070	875	533	343	520
7	941	1190	10100	1730	1770	1060	1160	1040	875	547	343	500
8	926	1560	9730	1990	1880	1150	1110	1030	869	547	343	485
9	908	1550	8410	2090	1790	1160	1080	893	860	552	335	483
10	890	1680	7310	2020	1600	1130	1030	839	824	552	321	490
11	884	3000	7300	2010	1430	1080	960	797	782	577	325	470
12	872	2470	7020	1930	1350	1140	941	794	770	577	333	450
13	920	2260	7050	1810	1320	1130	960	821	815	527	331	438
14	896	2470	7760	1630	1230	1070	985	875	815	472	327	435
15	884	4420	9130	1550	1210	1100	960	911	821	442	331	433
16	854	3730	8850	1500	1170	1060	1290	926	791	457	341	443
17	824	2960	6510	1530	1130	985	1320	911	758	445	333	470
18	728	2380	4680	1510	1080	932	1210	881	728	417	341	503
19	600	1650	3810	1440	1060	920	1390	863	716	417	341	550
20	540	1610	3280	1410	1050	923	1660	839	656	415	347	593
21	500	1540	2890	1500	1050	1100	1540	821	629	395	345	605
22	465	1450	2620	1570	1130	1200	1540	815	617	392	350	689
23	465	1300	2400	1440	1230	1350	1650	960	607	382	360	1330
24	475	1310	2050	1450	1260	1580	1550	995	602	375	375	1390
25	547	1800	2000	1450	1370	1540	1460	974	602	372	395	1150
26	674	5370	1940	1450	1510	1580	1490	967	597	382	397	1100
27	710	6560	1830	1420	1400	1640	1670	974	587	405	385	1080
28	707	5700	1560	1340	1300	2010	1890	985	577	395	385	1040
29	680	6840	1640	1310	---	1920	2090	1070	577	375	377	887
30	668	7640	1680	1270	---	1710	2030	1200	577	362	375	827
31	737	---	1530	1220	---	1680	---	1090	---	365	385	---
TOTAL	24351	85370	177800	48590	38570	38576	41076	31691	22566	14479	10951	19815
MEAN	786	2846	5735	1567	1378	1244	1369	1022	752	467	353	661
MAX	1080	7640	10500	2090	1880	2010	2090	1870	1040	577	397	1390
MIN	465	1190	1530	1220	1050	920	941	794	577	362	321	433
AC-FT	48300	169300	352700	96380	76500	76520	81470	62860	44760	28720	21720	39300

CAL YR 1977 TOTAL 519106 MEAN 1422 MAX 10500 MIN 250 AC-FT 1030000
WTR YR 1978 TOTAL 553835 MEAN 1517 MAX 10500 MIN 321 AC-FT 1099000

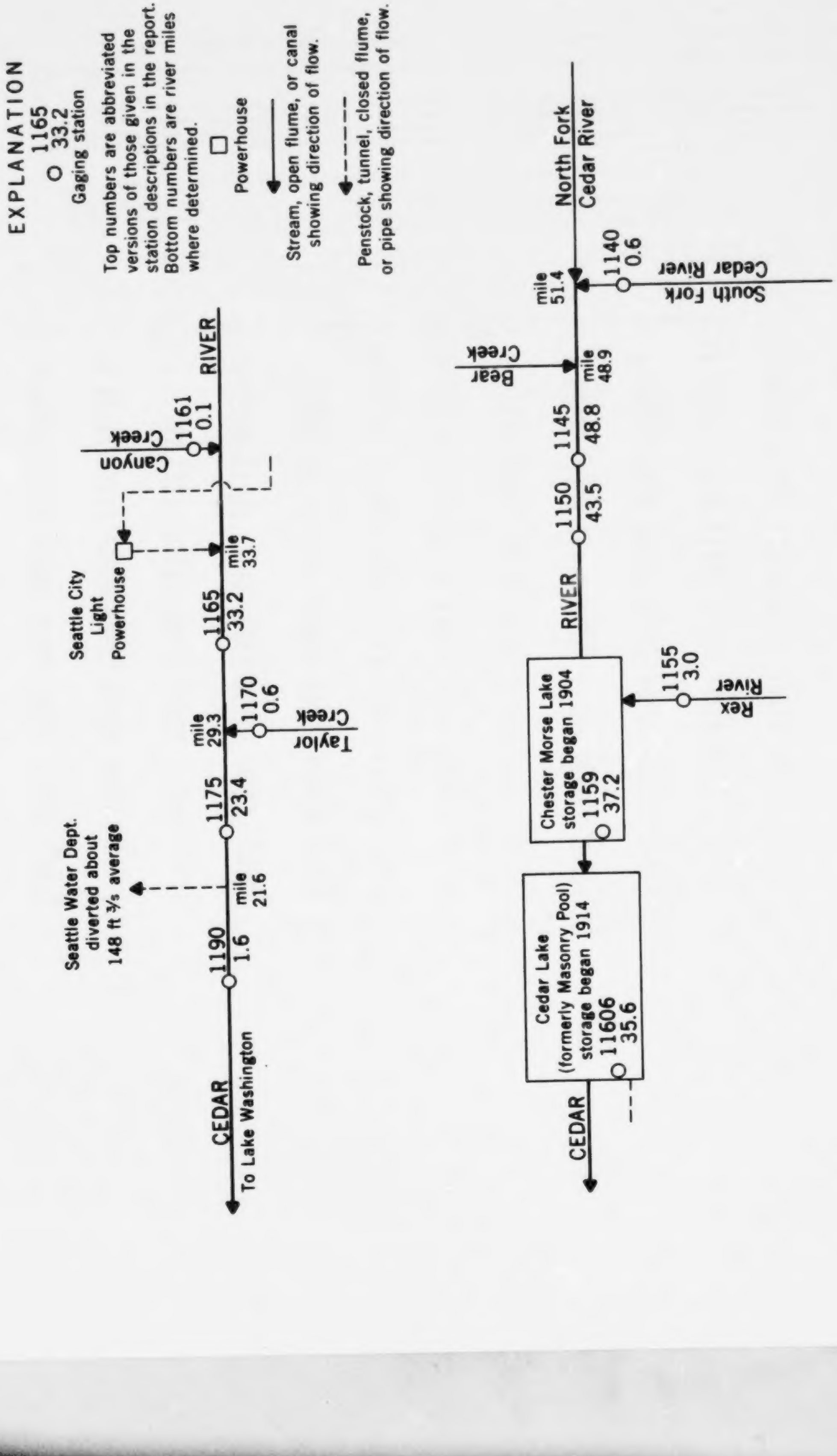

EXPLANATION
○ 1165
33.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
□ Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
CEDAR
RIVER
To Lake Washington
1190
1.6
mile 21.6
Seattle Water Dept. diverted about 148 ft³/s average
1175
23.4
mile 29.3
1170
0.6
Taylor Creek
1165
33.2
mile 33.7
Seattle City Light Powerhouse
1161
0.1
Canyon Creek
Cedar Lake (formerly Masonry Pool) storage began 1914
11606
35.6
Chester Morse Lake storage began 1904
1159
37.2
1155
3.0
Rex River
1150
43.5
1145
48.8
mile 48.9
Bear Creek
mile 51.4
1140
0.6
South Fork Cedar River
North Fork Cedar River

Figure 13. Gaging stations in Lake Washington basin (Cedar River).

12114000 SOUTH FORK CEDAR RIVER NEAR LESTER, WA

LOCATION.--Lat 47°18'30", long 121°31'00", in NE¼SE¼ sec.15, T.21 N., R.10 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank under logging road bridge, 0.6 mi (1.0 km) upstream from confluence with North Fork and 6.7 mi (10.8 km) north of Lester.

DRAINAGE AREA.--6.00 mi² (15.54 km²).

PERIOD OF RECORD.--October 1944 to current year.

REVISED RECORDS.--WSP 1446: 1953-54. WSP 1736: 1950(M).

GAGE.--Water-stage recorder. Concrete control Aug. 31, 1951, to Dec. 9, 1956, and since Oct. 8, 1957. Altitude of gage is 2,300 ft (701 m), from topographic map.

REMARKS.--Records good except those for periods Oct. 14 to Nov. 21, Dec. 4 to Jan. 17 and July 13 to Aug. 3, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--34 years, 38.2 ft³/s (1.082 m³/s) 86.46 in/yr (2,196 mm/yr), 27,680 acre-ft/yr (34.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,340 ft³/s (66.3 m³/s) Dec. 9, 1956, gage height, 10.41 ft (3.173 m), from floodmarks, from rating curve extended above 300 ft³/s (8.50 m³/s) on basis of slope-area measurement of peak flow; minimum, 1.9 ft³/s (0.054 m³/s) Nov. 27, 28, 1952, gage height, 2.80 ft (0.853 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	unknown	unknown		unknown		Nov. 29	0700	341	9.66	6.14	1.871
Nov. 25	2400	333	9.43	6.12	1.865	Dec. 2	0700	*1,020	28.9	*7.52	2.292

Minimum discharge, 3.5 ft³/s (0.099 m³/s) part or all of each day Aug. 8-10, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	110	413	14	12	22	57	48	34	11	4.2	4.4
2	20	140	718	14	12	20	49	45	38	11	4.1	4.0
3	19	80	330	16	13	19	42	42	41	11	4.0	3.8
4	17	54	160	21	14	18	39	40	41	11	3.9	3.9
5	16	42	110	19	19	17	35	36	39	9.8	3.8	4.2
6	16	40	105	18	25	16	32	33	34	9.5	3.7	4.5
7	16	58	90	19	26	19	29	31	29	9.2	3.7	4.4
8	15	45	64	28	28	19	27	32	26	9.0	3.6	4.7
9	14	44	53	25	26	19	26	36	29	8.7	3.5	4.8
10	13	74	63	26	24	20	26	38	29	9.0	3.6	5.6
11	13	78	123	24	22	20	29	45	25	8.7	3.7	5.7
12	12	68	133	23	20	20	29	47	23	7.9	4.0	5.8
13	12	64	152	20	19	19	28	49	22	7.6	3.8	5.7
14	12	110	175	18	18	18	26	74	20	7.2	3.6	5.6
15	11	105	131	19	17	18	25	77	20	7.0	6.5	5.8
16	11	90	91	17	16	18	25	69	19	8.7	4.8	8.6
17	10	60	69	16	15	19	24	63	18	7.4	4.3	11
18	9.6	46	54	16	15	22	26	57	18	7.2	4.1	13
19	9.1	40	46	16	16	25	27	57	17	7.1	4.4	12
20	8.7	33	35	16	17	29	29	61	17	6.8	4.1	11
21	8.3	30	30	17	19	35	31	58	16	6.3	4.0	11
22	8.1	28	27	17	23	47	32	48	16	6.0	4.4	12
23	8.9	26	26	16	28	58	32	40	15	5.8	4.2	21
24	12	23	25	15	31	61	32	34	14	5.6	4.1	29
25	16	110	24	15	30	82	34	31	14	5.5	4.0	25
26	15	228	23	15	29	84	45	29	13	5.2	3.9	22
27	14	137	21	14	26	77	63	32	13	5.1	3.8	20
28	13	157	20	14	24	75	67	37	12	4.9	3.8	18
29	15	267	19	13	---	74	61	36	12	4.8	3.7	17
30	32	132	18	12	---	75	53	34	11	4.6	3.7	16
31	34	---	17	12	---	69	---	33	---	4.4	3.9	---
TOTAL	451.7	2519	3360	545	584	1134	1080	1392	675	233.0	124.9	319.5
MEAN	14.6	84.0	108	17.6	20.9	36.6	36.0	44.9	22.5	7.52	4.03	10.7
MAX	34	267	718	28	31	84	67	77	41	11	6.5	29
MIN	8.1	23	17	12	12	16	24	29	11	4.4	3.5	3.8
CFSM	2.43	14.0	18.0	2.93	3.48	6.10	6.00	7.48	3.75	1.25	.67	1.78
IN.	2.80	15.62	20.83	3.38	3.62	7.03	6.69	8.63	4.18	1.44	.77	1.98
AC-FT	896	5000	6660	1080	1160	2250	2140	2760	1340	462	248	634

CAL YR 1977 TOTAL 12461.3 MEAN 34.1 MAX 718 MIN 3.0 CFSM 5.68 IN 77.25 AC-FT 24720
WTR YR 1978 TOTAL 12418.1 MEAN 34.0 MAX 718 MIN 3.5 CFSM 5.67 IN 76.98 AC-FT 24630

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'32", long 121°32'52", in SE¼SE¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft (152 m) downstream from Bear Creek and 12.2 mi (19.6 km) southeast of Cedar Falls.

DRAINAGE AREA.--25.4 mi² (65.8 km²).

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,880 ft (573 m) from topographic map. Prior to Sept. 16, 1960, at site 90 ft (27.4 m) upstream at datum 2.35 ft (0.714 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--21 years (water years 1946-63, 1976-78), 176 ft³/s (4.984 m³/s), 94.10 in/yr (2,390 mm/yr), 127,500 acre-ft/yr (157 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s (215.8 m³/s) Nov. 22, 1959, gage height, 6.98 ft (2.128 m) site and datum then in use, from rating curve extended above 890 ft³/s (25.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 12 ft³/s (0.34 m³/s) Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*) from rating curve extended above 510 ft³/s (14.4 m³/s) on basis of slope-area measurement at gage height 9.37 ft (2.856 m):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2200	1,030	29.2	5.41	1.649	Dec. 1	2000	*3,810	108	*7.55	2.301
Nov. 25	2300	1,400	39.6	5.86	1.786	Dec. 13	2000	854	24.2	4.69	1.430
Nov. 29	0400	1,030	29.2	5.41	1.649						

Minimum discharge, 22 ft³/s (0.62 m³/s) Aug. 29, 30, gage height, 2.01 ft (0.613 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	472	1720	64	64	96	230	212	192	76	30	35
2	88	650	2180	64	67	88	200	205	215	71	29	30
3	83	343	1030	74	77	84	180	205	235	68	28	27
4	75	244	690	92	82	80	176	194	247	68	27	27
5	70	189	444	87	98	76	162	182	245	66	27	30
6	68	178	432	83	122	73	149	176	212	63	26	32
7	74	267	388	79	128	88	140	170	184	60	26	30
8	67	207	301	118	129	96	133	176	174	59	24	33
9	67	199	253	114	126	92	129	192	196	56	24	34
10	63	337	341	114	115	90	135	198	186	55	24	45
11	59	354	615	105	106	92	147	222	160	54	26	45
12	56	308	650	100	96	90	140	222	153	51	29	43
13	56	288	720	96	90	90	135	242	147	50	27	41
14	52	482	752	95	84	85	128	324	135	47	27	39
15	50	459	576	95	79	84	124	304	131	46	50	53
16	50	352	396	91	74	85	131	280	129	54	34	97
17	46	276	283	87	70	93	129	265	124	51	30	111
18	45	219	225	82	74	103	135	245	128	47	28	102
19	43	183	188	82	79	115	138	259	126	46	33	95
20	41	158	164	80	80	128	149	295	120	43	29	90
21	40	137	153	90	85	146	151	277	117	41	27	85
22	38	125	144	93	96	178	155	222	110	40	33	108
23	45	117	131	85	111	220	155	186	101	38	30	188
24	54	110	120	80	124	230	153	166	96	37	28	174
25	80	530	111	79	120	304	162	156	108	36	27	146
26	72	903	100	84	115	313	202	151	95	36	26	124
27	68	555	92	77	110	295	295	170	92	35	25	113
28	64	601	85	74	103	289	317	198	90	34	24	101
29	67	878	82	71	---	283	271	188	88	33	23	92
30	142	576	76	68	---	289	235	172	82	32	23	84
31	148	---	70	66	---	265	---	174	---	31	29	---
TOTAL	2068	10697	13512	2669	2704	4640	5086	6628	4418	1524	873	2254
MEAN	66.7	357	436	86.1	96.6	150	170	214	147	49.2	28.2	75.1
MAX	148	903	2180	118	129	313	317	324	247	76	50	188
MIN	38	110	70	64	64	73	124	151	82	31	23	27
CFSM	2.63	14.1	17.2	3.39	3.80	5.91	6.69	8.43	5.79	1.94	1.11	2.96
IN.	3.03	15.67	19.79	3.91	3.96	6.80	7.45	9.71	6.47	2.23	1.28	3.30
AC-FT	4100	21220	26800	5290	5360	9200	10090	13150	8760	3020	1730	4470

CAL YR 1977 TOTAL 55584 MEAN 152 MAX 2180 MIN 15 CFSM 5.98 IN 81.40 AC-FT 110300
WTR YR 1978 TOTAL 57073 MEAN 156 MAX 2180 MIN 23 CFSM 6.14 IN 83.58 AC-FT 113200

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE¼SW¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi (2.3 km) upstream from Chester Morse Lake, 8.3 mi (13.4 km) southeast of Cedar Falls, and at mile 43.5 (70.0 km).

DRAINAGE AREA.--40.7 mi^2 (105.4 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P). 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,560 ft (475 m), from topographic map. Prior to Oct. 26, 1957, at site 80 ft (24 m) downstream at same datum.

REMARKS.--Records good except those during period of backwater from Chester Morse Lake Dec. 2-7, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--33 years, 272 ft^3/s (7.703 m^3/s), 90.76 in/yr (2,305 mm/yr) 197,100 acre-ft/yr (243 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft^3/s (269 m^3/s) Nov. 22, 1959, gage height, 11.34 ft (3.456 m), from high-water mark in well, from rating curve extended above 4,300 ft^3/s (122 m^3/s), on basis of slope-area measurements at gage heights 10.16 ft (3.097 m) and 11.34 ft (3.456 m); maximum gage height, 11.4 ft (3.47 m) Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 20 ft^3/s (0.57 m^3/s) Nov. 30 to Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft^3/s (34.0 m^3/s) and maximum(*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)	Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)
Nov. 1	2200	1,490	42.2	6.13	1.868	Dec. 2	unknown	*unknown	---	* (a)	---
Nov. 25	2400	2,190	62.0	7.06	2.152	Dec. 13	2400	1,610	45.6	6.54	1.993
Nov. 29	0600	1,460	41.3	6.09	1.856						

a Maximum gage height, 9.96 (3.036 m) from maximum stage indicator in well, backwater from Chester Morse Lake.

Minimum discharge, 35 ft^3/s (0.99 m^3/s) Aug. 9-10, gage height, 2.13 ft (0.649 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	736	1470	111	115	145	333	294	270	96	43	64
2	133	963	3500	111	128	135	282	273	303	92	42	57
3	122	527	1650	119	145	128	244	273	333	88	41	51
4	113	363	1110	171	150	124	235	270	347	87	40	50
5	104	276	710	164	173	118	220	242	338	84	39	55
6	101	261	690	155	222	112	196	229	295	81	38	58
7	109	391	620	148	224	139	182	220	247	77	37	55
8	98	309	559	220	222	155	169	224	225	75	37	56
9	100	305	438	213	211	143	160	249	259	73	36	57
10	89	533	595	213	189	140	162	262	260	73	35	64
11	82	561	1170	193	175	143	182	315	210	73	38	69
12	78	468	1240	187	159	145	171	333	195	69	42	67
13	80	435	1310	177	146	151	166	366	190	65	43	65
14	75	758	1430	171	138	148	157	507	172	63	40	63
15	70	730	1090	171	132	142	150	523	171	62	69	77
16	69	576	803	164	124	142	169	470	168	71	56	158
17	64	449	599	157	117	150	164	439	156	71	47	184
18	62	360	474	146	124	166	168	390	159	64	43	179
19	59	288	387	149	129	180	173	390	153	61	48	155
20	57	245	327	143	129	193	193	432	147	59	45	140
21	56	211	288	160	136	211	202	418	142	58	42	133
22	54	193	252	166	148	257	213	339	135	56	47	164
23	62	179	224	151	173	330	222	267	126	54	46	358
24	69	168	204	142	191	345	213	229	121	52	45	351
25	127	691	191	138	189	449	222	213	135	51	44	262
26	125	1430	177	150	180	470	276	202	119	49	41	208
27	113	859	160	139	166	435	407	233	112	50	40	181
28	104	945	151	136	159	421	460	300	109	48	38	161
29	110	1260	145	131	---	407	400	288	109	47	37	144
30	232	804	139	124	---	421	342	257	102	46	38	130
31	250	---	129	119	---	387	---	248	---	44	45	---
TOTAL	3109	16274	22232	4839	4494	7032	6833	9695	5808	2039	1322	3816
MEAN	100	542	717	156	161	227	228	313	194	65.8	42.6	127
MAX	250	1430	3500	220	224	470	460	523	347	96	69	358
MIN	54	168	129	111	115	112	150	202	102	44	35	50
CFSM	2.46	13.3	17.6	3.83	3.96	5.58	5.60	7.69	4.77	1.62	1.05	3.12
IN.	2.84	14.87	20.32	4.42	4.11	6.43	6.25	8.86	5.31	1.86	1.21	3.49
AC-FT	6170	32280	44100	9600	8910	13950	13550	19230	11520	4040	2620	7570

CAL YR 1977 TOTAL 85644 MEAN 235 MAX 3500 MIN 24 CFSM 5.77 IN 78.28 AC-FT 169900
WTR YR 1978 TOTAL 87493 MEAN 240 MAX 3500 MIN 35 CFSM 5.90 IN 79.97 AC-FT 173500

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE¼NW¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi (4.8 km) upstream from mouth and Chester Morse Lake and 7.5 mi (12.1 km) southeast of Cedar Falls.

DRAINAGE AREA.--13.4 mi^2 (34.7 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WRD Wash. 1974: 1973.

GAGE.--Water-stage recorder. Altitude of gage is 1,600 ft (488 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--33 years, 106 ft^3/s (3.002 m^3/s), 107.42 in/yr (2,728 mm/yr), 76,800 acre-ft/yr (94.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft^3/s (119 m^3/s) Nov. 22, 1959, gage height, 8.20 ft (2.499 m) from rating curve extended above 1,600 ft^3/s (45.3 m^3/s) on basis of contracted-opening measurement at gage height 7.19 ft (2.192 m) and slope-area measurement of peak flow; maximum gage height, 9.31 ft (2.838 m) Nov. 19, 1962, backwater from debris; minimum discharge, 4.3 ft^3/s (0.12 m^3/s) Nov. 29, 1952, gage height, 2.43 ft (0.741 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	2000	996	28.2	5.82	1.774	Dec. 2	0700	4,030	114	8.12	2.475
Nov. 25	2200	1,580	44.7	6.50	1.981	Dec. 13	1600	740	21.0	5.66	1.725
Nov. 29	0200	1,230	34.8	6.11	1.862						

Minimum discharge, 9.1 ft^3/s (0.26 m^3/s) Aug. 8, 9, 10, gage height, 3.24 ft (0.988 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	485	1250	31	42	51	95	95	67	26	12	52
2	50	420	2430	31	60	46	90	94	62	24	12	40
3	46	213	958	43	90	44	83	90	58	24	11	35
4	41	133	317	107	94	43	82	87	55	25	11	34
5	37	96	191	103	117	41	79	83	50	24	11	44
6	38	116	268	95	137	39	72	80	45	22	10	42
7	43	178	244	94	119	77	68	77	42	21	9.9	38
8	40	120	169	171	105	79	64	77	39	20	9.5	43
9	43	168	132	146	90	68	60	77	71	20	9.1	42
10	35	344	264	125	79	62	61	80	64	22	9.9	43
11	33	256	428	105	69	62	62	128	55	23	13	49
12	31	188	414	101	60	56	57	125	51	20	18	43
13	35	191	517	88	56	57	55	144	50	18	14	40
14	30	402	419	90	51	56	53	177	47	18	14	37
15	28	304	272	87	47	53	51	163	55	18	71	65
16	29	209	197	77	44	55	56	158	52	25	31	95
17	27	147	153	71	41	62	56	139	46	22	24	141
18	25	111	123	64	56	72	68	121	44	19	22	113
19	24	86	101	60	60	79	77	111	41	18	31	92
20	23	68	87	58	57	79	87	109	39	17	23	80
21	23	61	77	71	60	82	87	85	37	16	21	74
22	21	58	67	67	61	90	92	79	35	15	29	117
23	26	52	60	58	77	103	99	68	33	15	25	212
24	38	55	58	55	74	109	92	60	32	14	25	161
25	80	660	56	55	69	163	84	61	37	14	24	117
26	80	704	49	62	65	146	90	60	31	14	21	94
27	59	416	45	55	61	134	115	87	28	15	20	87
28	54	515	44	52	57	134	144	88	26	13	19	75
29	67	672	42	50	---	121	123	85	27	13	18	62
30	216	296	40	46	---	123	109	75	27	13	18	57
31	165	---	34	44	---	111	---	71	---	12	35	---
TOTAL	1541	7724	9506	2362	1998	2499	2411	3034	1346	580	621.4	2224
MEAN	49.7	257	307	76.2	71.4	80.6	80.4	97.9	44.9	18.7	20.0	74.1
MAX	216	704	2430	171	137	163	144	177	71	26	71	212
MIN	21	52	34	31	41	39	51	60	26	12	9.1	34
CFSM	3.71	19.2	22.9	5.69	5.33	6.02	6.00	7.31	3.35	1.40	1.49	5.53
IN.	4.28	21.44	26.39	6.56	5.55	6.94	6.69	8.42	3.74	1.61	1.72	6.17
AC-FT	3060	15320	18860	4690	3960	4960	4780	6020	2670	1150	1230	4410

CAL YR 1977 TOTAL 35970.1 MEAN 98.5 MAX 2430 MIN 7.2 CFSM 7.35 IN 99.85 AC-FT 71350
WTR YR 1978 TOTAL 35846.4 MEAN 98.2 MAX 2430 MIN 9.1 CFSM 7.33 IN 99.51 AC-FT 71100

12115900 CHESTER MORSE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°24'34", long 121°43'22", in SW¼NE¼ sec.12, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, 100 ft (30 m) upstream of Crib Dam, 3.1 mi (5.0 km) southeast of Cedar Falls.

DRAINAGE AREA.--78.4 mi^2 (203 km^2).

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Staff gage. Datum of gage is 7.39 ft (2.252 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Record good.

COOPERATION.--Gage readings furnished by City of Seattle.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,566.82 ft (477.567 m) Dec. 3; minimum observed, 1,541.95 ft (469.986 m) Aug. 1.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1544.90	1544.65	1558.30	1549.80	1545.48	1545.22	1549.03	1552.67	1553.56	1545.30	1541.95	1543.65
2	1545.02	1547.28	1564.22	1548.93	1545.45	1545.20	1549.24	1552.82	1553.25	1545.15	1542.00	1543.75
3	1545.08	1547.60	1566.82	1548.17	1545.60	1545.05	1549.43	1553.02	1552.94	1545.00	1542.02	1543.80
4	1545.14	1547.40	1565.68	1547.78	1545.70	1544.82	1549.69	1553.37	1552.50	1544.85	1542.02	1543.85
5	1545.10	1547.12	1563.62	1547.03	1545.80	1544.72	1549.89	1553.52	1551.95	1544.72	1542.08	1544.02
6	1545.08	1547.00	1561.94	1547.15	1546.12	1544.65	1549.96	1553.72	1551.38	1544.54	1542.12	1544.06
7	1545.12	1547.28	1561.23	1547.23	1546.22	1544.50	1549.97	1553.66	1550.77	1544.42	1542.13	1544.10
8	1545.14	1547.42	1560.28	1547.30	1546.32	1544.65	1549.96	1553.56	1550.17	1544.27	1542.12	1544.25
9	1545.20	1547.34	1559.28	1546.83	1546.22	1544.78	1549.92	1553.59	1549.68	1544.13	1542.08	1544.35
10	1545.20	1547.90	1558.46	1546.90	1546.20	1544.65	1549.88	1553.72	1549.50	1544.02	1542.10	1544.38
11	1545.12	1548.90	1559.02	1546.76	1546.10	1544.62	1549.88	1553.98	1549.20	1543.91	1542.16	1544.60
12	1545.08	1549.60	1559.93	1546.65	1546.04	1544.72	1549.84	1554.36	1548.75	1543.75	1542.28	1544.61
13	1545.06	1550.22	1560.33	1546.50	1545.90	1544.72	1549.76	1554.69	1548.15	1543.70	1542.38	1544.66
14	1545.02	1550.90	1561.13	1546.40	1545.82	1544.85	1549.70	1555.16	1547.55	1543.60	1542.42	1544.80
15	1544.95	1552.10	1561.13	1546.30	1545.85	1544.95	1549.65	1555.57	1546.95	1543.40	1542.57	1544.85
16	1544.90	1552.62	1560.64	1546.40	1545.55	1545.00	1549.58	1555.68	1546.73	1543.25	1542.35	1545.30
17	1544.90	1552.68	1559.82	1546.18	1545.40	1545.10	1549.60	1555.48	1546.62	1543.18	1542.82	1545.75
18	1544.75	1552.57	1558.97	1546.00	1545.28	1545.22	1549.57	1555.34	1546.48	1543.07	1542.88	1546.13
19	1544.68	1552.18	1558.10	1546.00	1545.28	1545.35	1549.53	1555.04	1546.35	1542.95	1542.95	1545.92
20	1544.45	1551.73	1557.45	1545.95	1545.25	1545.60	1549.66	1554.73	1546.25	1542.90	1543.00	1545.76
21	1544.12	1551.15	1556.63	1546.00	1545.20	1545.68	1549.74	1554.43	1546.18	1542.80	1543.04	1545.56
22	1543.84	1550.51	1556.01	1546.05	1545.20	1545.90	1549.89	1554.06	1546.14	1542.70	1543.09	1545.55
23	1543.65	1549.76	1555.49	1546.15	1545.20	1546.05	1550.09	1553.87	1546.00	1542.60	1543.18	1545.80
24	1543.40	1549.28	1554.88	1545.98	1545.20	1546.30	1550.27	1553.66	1545.88	1542.44	1543.22	1546.32
25	1543.42	1549.12	1554.38	1546.00	1545.25	1546.64	1550.33	1553.48	1545.80	1542.37	1543.25	1546.45
26	1543.50	1552.42	1553.70	1546.00	1545.25	1546.94	1550.50	1553.40	1545.72	1542.30	1543.30	1546.33
27	1543.50	1554.69	1553.20	1545.85	1545.28	1547.10	1550.82	1553.30	1545.62	1542.22	1543.30	1546.21
28	1543.44	1555.92	1552.49	1545.72	1545.25	1547.48	1551.44	1553.42	1545.55	1542.12	1543.32	1546.20
29	1543.40	1557.48	1551.98	1545.68	---	1547.90	1552.00	1553.51	1545.45	1542.10	1543.32	1546.05
30	1543.60	1558.40	1551.14	1545.70	---	1548.25	1552.40	1553.64	1545.40	1542.00	1543.36	1545.95
31	1544.15	---	1550.50	1545.52	---	1548.78	---	1553.73	---	1541.96	1543.38	---
MEAN	1544.51	1550.44	1558.28	1546.61	1545.62	1545.66	1550.04	1554.01	1548.22	1543.41	1542.65	1545.10
MAX	1545.20	1558.40	1566.82	1549.80	1546.32	1548.78	1552.40	1555.68	1553.56	1545.30	1543.38	1546.45
MIN	1543.40	1544.65	1550.50	1545.52	1545.20	1544.50	1549.03	1552.67	1545.40	1541.96	1541.95	1543.65

WTR YR 1978 MEAN 1547.89 MAX 1566.82 MIN 1541.95

12116060 CEDAR LAKE (MASONRY POOL) NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°24'43", long 121°45'04", in NE¼NW¼ sec.11, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, at Masonry Dam, 1.6 mi (2.6 km) southeast of Cedar Falls.

DRAINAGE AREA.--78.4 mi^2 (203 km^2).

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Datum of gage is 7.39 ft (2.252 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Records good. From August 2 to September 18 pool was drained for maintenance.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,566.82 ft (477.567 m) Dec. 3; minimum observed, see REMARKS.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1531.68	1529.83	1558.30	1549.80	1535.04	1531.29	1549.03	1552.67	1553.56	1534.73	1515.88	---
2	1531.71	1534.85	1564.22	1548.93	1535.71	1531.92	1549.24	1552.82	1553.25	1534.27	---	---
3	1531.78	1546.20	1566.82	1548.17	1536.90	1530.26	1549.43	1553.02	1552.94	1533.48	---	---
4	1530.25	1545.66	1565.68	1547.78	1536.28	1530.73	1549.69	1553.37	1552.50	1532.83	---	---
5	1529.07	1546.85	1563.62	1547.03	1538.40	1533.29	1549.89	1553.52	1551.95	1532.31	---	---
6	1528.25	1546.75	1561.94	1546.12	1539.73	1534.30	1549.96	1553.72	1551.38	1532.55	---	---
7	1527.31	1547.15	1561.23	1544.23	1539.69	1530.56	1549.97	1553.66	1550.77	1533.06	---	---
8	1526.53	1547.17	1560.28	1545.30	1539.03	1533.18	1549.96	1553.56	1550.17	1533.25	---	---
9	1525.84	1547.32	1559.28	1546.80	1538.61	1534.49	1549.92	1553.59	1549.68	1533.24	---	---
10	1525.15	1547.86	1558.46	1546.20	1540.85	1530.39	1549.88	1553.72	1549.50	1533.17	---	---
11	1525.09	1548.90	1559.02	1545.31	1538.58	1533.15	1549.88	1553.98	1549.20	1533.05	---	---
12	1524.52	1549.60	1559.93	1545.48	1538.04	1534.70	1549.84	1554.36	1548.75	1532.90	---	---
13	1524.03	1550.22	1560.33	1544.90	1539.65	1534.90	1549.76	1554.69	1548.15	1532.80	---	---
14	1523.23	1550.90	1561.13	1542.87	1536.73	1531.41	1549.70	1555.16	1547.55	1533.08	---	---
15	1522.58	1552.10	1561.13	1543.38	1533.55	1532.90	1549.65	1555.57	1546.95	1533.38	---	---
16	1522.15	1552.62	1560.64	1542.98	1533.00	1533.62	1549.58	1555.68	1546.37	1533.48	---	---
17	1521.55	1552.68	1559.82	1540.90	1532.63	1533.44	1549.60	1555.48	1546.11	1533.47	---	---
18	1522.86	1552.57	1558.97	1539.75	1532.65	1532.85	1549.57	1555.34	1545.85	1533.49	---	---
19	1522.77	1552.18	1558.10	1539.75	1535.20	1533.65	1549.53	1555.04	1545.45	1533.24	---	1522.06
20	1524.98	1551.73	1557.45	1540.25	1536.62	1534.05	1549.66	1554.73	1545.08	1532.88	---	1528.92
21	1526.77	1551.15	1556.63	1541.53	1535.80	1532.96	1549.74	1554.43	1544.52	1532.58	---	1531.35
22	1528.18	1550.51	1556.01	1541.57	1534.05	1534.27	1549.89	1554.06	1544.22	1532.20	---	1532.44
23	1528.90	1549.76	1555.49	1541.85	1530.23	1534.29	1550.09	1553.87	1540.91	1532.05	---	1533.34
24	1529.28	1549.28	1554.88	1539.09	1533.45	1537.08	1550.27	1553.66	1540.60	1531.83	---	1535.82
25	1529.24	1549.12	1554.38	1540.78	1538.25	1540.30	1550.33	1553.48	1539.81	1531.11	---	1538.70
26	1529.13	1552.42	1553.70	1536.85	1532.40	1544.32	1550.50	1553.40	1539.16	1530.48	---	1540.28
27	1529.05	1554.69	1553.20	1535.32	1534.50	1546.92	1550.82	1553.30	1538.51	1530.32	---	1540.97
28	1528.99	1555.92	1552.49	1533.50	1531.29	1547.42	1551.44	1553.42	1537.55	1530.07	---	1541.35
29	1529.03	1557.48	1551.98	1536.45	---	1547.86	1552.00	1553.51	1536.53	1528.73	---	1541.37
30	1529.20	1558.40	1551.14	1537.80	---	1548.24	1552.40	1553.64	1535.77	1527.40	---	1540.46
31	1529.40	---	1550.50	1535.30	---	1548.78	---	1553.73	---	1526.18	---	---
MEAN	1527.05	1549.40	1558.28	1542.45	1535.96	1536.05	1550.04	1554.01	1546.09	1532.18	---	---
MAX	1531.78	1558.40	1566.82	1549.80	1540.85	1548.78	1552.40	1555.68	1553.56	1534.73	---	---
MIN	1521.55	1529.83	1550.50	1533.50	1530.23	1530.26	1549.03	1552.67	1535.77	1526.18	---	---

12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'11", long 121°45'55", in NW¼SE¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft (122 m) upstream from mouth and 0.8 mi (1.3 km) east of Cedar Falls.

DRAINAGE AREA.--0.19 mi^2 (0.49 km^2).

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 1,040 ft (317 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Dec. 6-8, which are fair. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--33 years, 16.1 ft^3/s (0.456 m^3/s), 11,660 acre-ft/yr (14.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft^3/s (3.71 m^3/s) Dec. 7, 1975, gage height, 2.22 ft (0.677 m); minimum, 0.3 ft^3/s (0.008 m^3/s) for many days during 1953-55, 1958 and 1961 water years, Oct. 28, 29, 1966, and Nov. 27, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 81 ft^3/s (2.29 m^3/s) Dec. 7, gage height, 1.97 ft (0.600 m); minimum, 0.36 ft^3/s (0.010 m^3/s), Sept. 19, 20, 21, 22, gage height, 0.58 ft (0.177 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.6	22	17	5.6	3.5	3.5	13	21	9.2	4.1	.78
2	2.1	1.6	29	16	5.6	3.3	3.7	13	20	8.9	4.1	.70
3	2.3	1.5	36	15	5.3	3.3	3.9	14	20	8.5	4.1	.64
4	2.3	1.5	46	14	5.0	3.3	4.3	14	20	7.8	4.1	.64
5	2.3	1.5	60	14	5.0	3.1	4.8	15	20	7.8	3.9	.58
6	2.3	1.6	72	13	4.8	3.1	5.0	15	19	7.2	3.8	.58
7	2.3	1.9	78	13	4.8	3.1	5.6	16	19	7.2	3.6	.58
8	2.3	2.3	74	12	4.5	3.1	6.1	17	18	7.0	3.4	.53
9	2.3	2.7	69	11	4.5	2.9	6.4	17	18	6.7	3.2	.53
10	2.3	3.1	69	11	4.5	2.9	7.0	18	17	6.4	3.1	.48
11	2.3	3.6	68	11	4.3	2.9	7.2	18	17	6.4	2.9	.48
12	2.3	4.1	63	10	4.3	2.9	7.8	18	16	6.1	2.7	.44
13	2.3	4.7	60	10	4.3	2.9	8.2	19	15	5.8	2.5	.44
14	2.3	5.7	59	9.2	4.3	2.9	8.5	19	15	5.6	2.3	.44
15	2.1	6.3	59	9.2	4.3	2.7	8.9	20	15	5.6	2.2	.40
16	2.1	7.4	59	8.9	4.1	2.7	9.2	20	14	5.3	2.1	.40
17	2.1	8.8	56	8.5	4.1	2.7	9.6	22	14	5.0	2.0	.40
18	1.9	10	55	8.2	4.1	2.7	10	22	14	5.0	1.8	.40
19	1.9	11	53	8.2	4.1	2.7	10	23	13	5.0	1.7	.40
20	1.9	12	51	7.8	3.9	2.7	10	23	13	4.8	1.6	.36
21	1.8	13	48	7.5	3.9	2.7	11	24	13	4.5	1.5	.36
22	1.8	13	43	7.2	3.9	2.7	11	24	12	4.5	1.4	.36
23	1.8	14	39	7.0	3.7	2.7	11	24	12	4.4	1.3	.48
24	1.6	14	35	7.0	3.7	2.7	11	23	11	4.3	1.2	.44
25	1.6	15	32	6.7	3.7	2.7	11	23	11	4.2	1.2	.44
26	1.6	15	29	6.7	3.7	2.7	11	23	11	4.1	1.1	.44
27	1.6	15	26	6.4	3.5	2.7	12	23	11	4.1	.96	.48
28	1.6	15	25	6.4	3.5	2.7	12	22	10	4.1	.86	.64
29	1.5	16	23	6.1	---	2.7	12	22	10	4.1	.86	.86
30	1.6	18	20	5.8	---	2.9	13	21	9.6	4.1	.78	1.2
31	1.5	---	19	5.8	---	3.1	---	21	---	4.1	.78	---
TOTAL	61.8	240.9	1477	299.6	121.0	89.7	254.7	606	448.6	177.8	71.14	15.90
MEAN	1.99	8.03	47.6	9.66	4.32	2.89	8.49	19.5	15.0	5.74	2.29	.53
MAX	2.3	18	78	17	5.6	3.5	13	24	21	9.2	4.1	1.2
MIN	1.5	1.5	19	5.8	3.5	2.7	3.5	13	9.6	4.1	.78	.36
AC-FT	123	478	2930	594	240	178	505	1200	890	353	141	32

CAL YR 1977 TOTAL 3995.34 MEAN 10.9 MAX 78 MIN .70 AC-FT 7920
WTR YR 1978 TOTAL 3864.14 MEAN 10.6 MAX 78 MIN .36 AC-FT 7660

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW¼SE¼ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi (0.8 km) downstream from Seattle municipal powerplant at Cedar Falls, 4.0 mi (6.4 km) downstream from Chester Morse Lake, and at mile 33.2 (53.4 km).

DRAINAGE AREA.--84.2 mi² (218.1 km²).

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1386: 1934(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft (275.0 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. All artificially diverted water returned to river above station. Regulation by Chester Morse Lake for power.

AVERAGE DISCHARGE.--64 years, 324 ft³/s (9.176 m³/s), 234,700 acre-ft/yr (289 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,860 ft³/s (194 m³/s) Dec. 3, 1975, gage height, 11.68 ft (3.560 m); no flow for part of Nov. 25, 1917, Aug. 18, 1923; minimum daily, 0.5 ft³/s (0.014 m³/s) Oct. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,500 ft³/s (156 m³/s) Dec. 3, gage height, 10.95 ft (3.338 m); minimum, 9.6 ft³/s (0.27 m³/s) Oct. 17, gage height, 4.44 ft (1.353 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	209	1390	684	222	234	83	90	466	183	297	64
2	44	229	3850	690	108	310	85	94	462	183	113	66
3	95	505	5380	690	275	278	81	100	646	183	46	67
4	145	475	4400	618	96	98	81	102	662	186	42	67
5	145	222	3250	673	104	96	83	88	646	152	40	69
6	150	218	2580	657	322	403	106	210	646	112	39	70
7	147	286	2250	510	386	102	132	296	646	112	38	70
8	150	398	1850	292	408	96	132	198	624	116	37	71
9	150	229	1500	540	135	421	132	98	435	116	36	74
10	130	229	1340	565	453	94	135	102	466	118	37	75
11	150	232	1540	408	358	96	142	102	435	116	37	78
12	150	229	1840	394	102	100	142	102	510	112	39	78
13	150	232	2050	530	390	421	142	104	560	92	40	78
14	152	306	2360	326	439	102	140	204	408	76	40	80
15	150	550	2320	346	296	102	137	435	570	75	46	90
16	150	700	2080	462	296	142	145	714	399	78	47	115
17	95	694	1730	399	275	165	140	629	216	75	47	152
18	127	694	1450	271	96	102	140	679	213	70	48	100
19	150	694	1220	210	94	100	142	668	192	70	49	44
20	173	694	1090	98	201	237	147	668	170	71	49	76
21	176	694	947	110	261	85	147	668	137	72	49	80
22	176	694	828	112	475	231	150	550	354	75	50	83
23	179	700	738	515	96	122	152	408	172	71	51	105
24	185	688	726	104	439	96	147	346	177	78	53	101
25	191	535	720	435	165	104	155	275	180	80	53	87
26	197	676	720	403	108	104	118	271	172	64	53	81
27	194	718	702	403	412	100	94	219	175	59	53	80
28	194	832	696	106	240	94	102	170	183	86	52	83
29	191	1110	696	106	---	81	100	120	183	95	53	115
30	197	1230	690	370	---	85	96	172	183	96	52	132
31	197	---	690	198	---	88	---	210	---	205	57	---
TOTAL	4725	15902	53623	12225	7252	4889	3728	9092	11288	3277	1743	2531
MEAN	152	530	1730	394	259	158	124	293	376	106	56.2	84.4
MAX	197	1230	5380	690	475	421	155	714	662	205	297	152
MIN	44	209	690	98	94	81	81	88	137	59	36	44
CFSM	1.81	6.30	20.5	4.68	3.08	1.88	1.47	3.48	4.47	1.26	.67	1.00
IN.	2.09	7.03	23.69	5.40	3.20	2.16	1.65	4.02	4.99	1.45	.77	1.12
AC-FT	9370	31540	106400	24250	14380	9700	7390	18030	22390	6500	3460	5020

CAL YR 1977 TOTAL 124064 MEAN 340 MAX 5380 MIN 29 CFSM 4.04 IN 54.81 AC-FT 246100
WTR YR 1978 TOTAL 130275 MEAN 357 MAX 5380 MIN 36 CFSM 4.24 IN 57.56 AC-FT 258400

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW¼NW¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi (1.0 km) upstream from mouth and 1.3 mi (2.1 km) northeast of Selleck.

DRAINAGE AREA.--17.2 mi² (44.5 km²).

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft (287 m), from topographic map. June to October 1945 on right bank 350 ft (107 km) downstream at different datum.

REMARKS.--Records good except those for period of no gage-height record Feb. 15 to Mar. 28, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--22 years, 103 ft³/s (2.917 m³/s), 81.32 in/yr (2,066 mm/yr), 74,620 acre-ft/yr (92.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft³/s (77.3 m³/s) Jan. 29, 1965, gage height, 5.78 ft (1.762 m) from rating curve extended above 1,100 ft³/s (31.2 m³/s), on basis of slope-area measurement of peak flow; minimum, 16 ft³/s (0.45 m³/s) Oct. 2-7, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 864 ft³/s (24.5 m³/s) Dec. 2, gage height, 4.23 ft (1.289 m); minimum, 24 ft³/s (0.68 m³/s) Aug. 8, 9, 10, gage height, 1.88 ft (0.573 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	159	316	98	90	74	86	107	67	40	28	60
2	42	183	662	96	129	64	87	101	63	39	27	50
3	40	114	490	109	133	61	83	97	59	40	27	44
4	37	87	338	154	120	59	92	100	58	43	26	43
5	36	73	251	156	123	56	91	94	55	42	26	49
6	37	72	379	151	135	52	84	90	54	38	25	49
7	40	88	338	147	124	98	79	86	52	37	25	44
8	38	71	251	218	118	100	76	83	52	37	25	42
9	41	91	209	193	113	95	72	81	67	37	25	50
10	36	143	291	168	102	88	70	81	59	38	25	47
11	34	127	406	148	97	87	68	99	55	46	28	49
12	33	130	406	142	92	82	65	93	59	39	34	45
13	38	139	415	131	88	80	65	105	62	36	33	42
14	34	208	406	130	81	77	65	114	58	35	30	39
15	32	169	358	123	74	74	64	112	59	34	50	49
16	35	146	312	115	68	78	82	121	58	46	35	81
17	32	123	254	109	66	82	78	119	52	44	31	107
18	31	108	221	104	86	84	95	107	50	38	30	83
19	30	97	197	100	92	88	101	98	49	37	31	69
20	30	89	181	96	86	90	111	89	47	35	29	59
21	30	84	163	120	92	92	109	83	46	33	28	56
22	29	81	151	107	94	95	126	82	45	32	34	87
23	33	81	145	99	120	98	126	80	44	31	30	215
24	39	93	140	95	112	100	114	75	44	31	36	149
25	59	366	136	97	105	112	107	74	47	30	32	105
26	53	433	127	111	99	103	111	73	44	32	29	84
27	42	295	123	99	93	94	134	84	42	33	28	73
28	40	326	117	97	84	93	150	86	40	30	27	70
29	52	319	115	95	---	89	137	81	40	30	25	62
30	91	230	111	90	---	94	121	75	43	29	25	60
31	73	---	103	89	---	92	---	70	---	28	39	---
TOTAL	1262	4725	8112	3787	2816	2631	2849	2840	1570	1120	923	2062
MEAN	40.7	158	262	122	101	84.9	95.0	91.6	52.3	36.1	29.8	68.7
MAX	91	433	662	218	135	112	150	121	67	46	50	215
MIN	29	71	103	89	66	52	64	70	40	28	25	39
CFSM	2.37	9.19	15.2	7.09	5.87	4.94	5.52	5.33	3.04	2.10	1.73	3.99
IN.	2.73	10.22	17.54	8.19	6.09	5.69	6.16	6.14	3.40	2.42	2.00	4.46
AC-FT	2500	9370	16090	7510	5590	5220	5650	5630	3110	2220	1830	4090

CAL YR 1977 TOTAL 31334 MEAN 85.8 MAX 662 MIN 22 CFSM 4.99 IN 67.76 AC-FT 62150
WTR YR 1978 TOTAL 34697 MEAN 95.1 MAX 662 MIN 25 CFSM 5.53 IN 75.04 AC-FT 68820

12117490 CEDAR RIVER ABOVE ROCK CREEK NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'28", long 121°55'08", in NW¼SE¼ sec.16, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, at Trude Road bridge, 3.8 mi (2.9 km) upstream from gaging station (12117500) and 2.6 mi (4.2 km) northeast of Landburg.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--Water year 1973, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
03...	1110	245	75	7.6	8.3	5	1
NOV							
28...	1135	1450	41	7.3	6.8	5	2
DEC							
19...	1135	1960	41	7.1	5.6	25	6
JAN , 1978							
16...	1100	705	55	7.4	6.2	10	1
FEB							
21...	1115	639	60	8.0	8.0	35	2
MAR							
06...	1055	525	65	7.6	6.7	10	1
APR							
03...	1045	388	65	7.5	7.8	5	1
MAY							
01...	1050	456	66	7.3	8.3	0	2
JUN							
19...	0955	525	56	7.2	11.2	10	1
JUL							
17...	1030	358	55	7.7	10.7	5	1
AUG							
07...	1135	261	61	8.2	11.0	0	1
SEP							
18...	1315	414	39	7.5	10.0	5	--

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
03...	12.1	.17	.04	.01	.00	.00
NOV						
28...	12.9	.21	.04	.02	.00	.00
DEC						
19...	12.6	.13	.08	.02	.00	.00
JAN , 1978						
16...	11.9	.17	.02	.04	.01	.03
FEB						
21...	12.5	.15	.08	.01	.01	.03
MAR						
06...	12.2	.15	.03	.01	.01	.03
APR						
03...	11.6	.16	.01	.01	.00	.00
MAY						
01...	11.5	.15	.02	.01	.00	.00
JUN						
19...	10.2	.10	.03	.01	.00	.00
JUL						
17...	11.9	.14	.01	.01	.00	.00
AUG						
07...	11.5	.16	.02	.01	.00	.00
SEP						
18...	10.6	.17	.07	.03	.00	.00

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'38", long 121°57'12", on west line NW¼SW¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi (2.9 km) upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi (6.4 km) east of Maple Valley, 5.9 mi (9.5 km) downstream from Taylor Creek, and at mile 23.4 (37.7 km).

DRAINAGE AREA.--121 mi^2 (313 km^2) excludes Walsh Lake diversion which enters Cedar River at mile 19.5 (31.4 km), and excludes 1.9 mi^2 (4.9 km^2) of Walsh Lake drainage in Cedar River basin normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1902-9. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft (172.49 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1898 nonrecording gage at site 2.2 mi (3.5 km) downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi (3.2 km) downstream at datum 535.84 ft (163.324 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--Water-discharge records excellent. All diversions except Rock Creek returned to river above station. Rock Creek, a tributary which entered naturally just above station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi (6.3 km) below station. Some regulation by Chester Morse Lake and Masonry Dam, 12.2 mi (19.6 km) upstream.

AVERAGE DISCHARGE.--83 years, 700 ft^3/s (19.82 m^3/s) 507,200 acre-ft/yr (625 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft^3/s (402 m^3/s) Nov. 19, 1911, gage height, 10.0 ft (3.05 m), from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum observed, 83 ft^3/s (2.35 m^3/s) Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,900 ft^3/s (167 m^3/s) Dec. 3, gage height, 6.94 ft (2.115 m); minimum, 209 ft^3/s (5.92 m^3/s) Oct. 17, gage height, 0.93 ft (0.283 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	515	1950	1120	605	594	396	451	810	471	537	309
2	248	622	4500	1110	567	669	392	442	810	471	396	294
3	274	729	5730	1130	723	616	388	451	972	471	282	283
4	342	784	4900	1130	535	442	414	466	1030	475	273	282
5	339	480	3820	1210	525	423	410	442	1000	447	267	294
6	342	471	3380	1200	765	687	405	525	995	388	263	294
7	350	567	3070	1080	817	495	432	645	1000	384	261	284
8	346	639	2610	916	836	451	428	561	1000	384	257	279
9	354	510	2230	1090	556	693	423	428	830	384	254	300
10	327	567	2190	1080	849	485	419	428	804	388	253	300
11	342	546	2500	972	778	428	423	451	753	396	256	301
12	339	540	2730	862	495	456	419	451	862	384	267	292
13	350	551	2940	1020	765	759	414	470	923	358	268	286
14	342	687	3220	843	791	471	414	545	804	339	258	284
15	335	862	3160	778	711	442	414	800	895	331	292	300
16	339	1010	2950	895	669	451	466	1100	804	354	272	366
17	287	987	2550	875	645	510	447	1040	546	350	264	434
18	308	972	2220	693	466	432	475	1060	535	333	259	404
19	331	951	1970	639	461	423	495	1030	510	327	262	280
20	346	937	1770	510	546	546	515	1020	475	325	258	310
21	350	930	1570	540	611	410	505	1000	442	322	255	312
22	354	930	1420	525	759	525	540	850	639	319	265	365
23	363	930	1290	856	530	442	546	750	500	314	261	617
24	375	965	1260	567	723	414	520	645	475	318	271	500
25	414	1220	1240	765	616	471	510	640	480	318	267	403
26	414	1590	1220	909	485	442	485	622	471	312	262	358
27	396	1350	1190	784	735	423	500	605	466	300	254	335
28	392	1450	1180	577	616	428	535	535	471	317	250	329
29	405	1740	1170	510	---	401	510	471	471	327	248	341
30	466	1750	1150	717	---	405	480	461	475	326	245	363
31	437	---	1140	622	---	410	---	546	---	395	263	---
TOTAL	10865	26782	74220	26525	18180	15244	13720	19931	21248	11328	8540	10099
MEAN	350	893	2394	856	649	492	457	643	708	365	275	337
MAX	466	1750	5730	1210	849	759	546	1100	1030	475	537	617
MIN	248	471	1140	510	461	401	388	428	442	300	245	279
AC-FT	21550	53120	147200	52610	36060	30240	27210	39530	42150	22470	16940	20030

CAL YR 1977 TOTAL 233846 MEAN 641 MAX 5730 MIN 224 AC-FT 463800
WTR YR 1978 TOTAL 256682 MEAN 703 MAX 5730 MIN 245 AC-FT 509100

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1953 to current year.

INSTRUMENTATION.--Temperature recorder since August 1953.

REMARKS.--Temperature recorder clock stopped Oct. 1-2 (range in temperature 8.0°C to 9.0°C).

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 19.5°C July 27, 28, 1960, July 13, 1961; minimum, 2.0°C on several days during winter of 1956, 1957,1960, 1971 and 1973.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 16.5°C July 31, Aug. 1; minimum, 4.5°C Jan. 1, 2, 3, 4.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.5	8.5	8.5	6.5	6.0	6.5	5.0	4.5	4.5
2	---	---	---	8.5	8.0	8.0	6.0	6.0	6.0	4.5	4.5	4.5
3	8.5	8.0	8.0	8.0	7.0	8.0	6.0	6.0	6.0	4.5	4.5	4.5
4	9.0	8.5	9.0	7.0	7.0	7.0	6.0	5.5	5.5	5.0	4.5	4.5
5	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
6	9.0	8.5	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.0	5.0	5.0
7	9.0	8.5	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.5	5.0	5.5
8	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.5	5.0	5.5
9	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.5	5.5	5.5
10	9.0	8.5	9.0	7.0	7.0	7.0	5.5	5.5	5.5	5.5	5.5	5.5
11	9.0	8.5	9.0	7.0	7.0	7.0	5.5	5.0	5.5	5.5	5.5	5.5
12	9.0	8.5	9.0	7.0	7.0	7.0	5.0	5.0	5.0	6.0	5.5	5.5
13	9.0	9.0	9.0	7.0	7.0	7.0	5.0	5.0	5.0	6.0	5.5	5.5
14	9.0	8.5	9.0	7.0	7.0	7.0	5.5	5.0	5.5	6.0	5.5	5.5
15	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5	6.0	6.0	6.0
16	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5	6.0	5.5	5.5
17	9.0	8.5	9.0	7.0	6.0	6.5	5.5	5.5	5.5	6.0	5.5	5.5
18	8.5	8.5	8.5	6.0	6.0	6.0	5.5	5.5	5.5	6.0	5.5	5.5
19	8.5	8.5	8.5	6.0	6.0	6.0	5.5	5.5	5.5	6.5	6.0	6.5
20	8.5	8.5	8.5	6.0	5.5	5.5	5.5	5.5	5.5	7.0	6.5	6.5
21	9.0	8.5	9.0	5.5	5.0	5.5	6.0	5.5	5.5	7.0	7.0	7.0
22	9.0	9.0	9.0	5.0	5.0	5.0	6.0	5.5	5.5	7.0	7.0	7.0
23	9.0	9.0	9.0	5.0	5.0	5.0	6.0	5.5	5.5	7.0	5.5	6.5
24	9.0	9.0	9.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	5.5	5.5
25	9.0	9.0	9.0	5.5	5.0	5.5	6.0	5.5	5.5	6.5	6.0	6.5
26	9.0	8.5	9.0	5.5	5.5	5.5	6.0	5.5	5.5	6.5	6.0	6.5
27	8.5	8.5	8.5	5.5	5.5	5.5	5.5	5.5	5.5	6.5	6.0	6.5
28	8.5	8.5	8.5	6.0	5.5	5.5	5.5	5.5	5.5	6.5	6.0	6.5
29	8.5	8.5	8.5	6.0	6.0	6.0	5.5	5.5	5.5	7.0	6.5	6.5
30	8.5	8.5	8.5	6.0	6.0	6.0	5.5	5.5	5.5	7.0	6.0	6.5
31	8.5	8.5	8.5	---	---	---	5.5	5.0	5.5	6.5	6.0	6.5
MONTH	9.0	8.0	9.0	8.5	5.0	6.5	6.5	5.0	5.5	7.0	4.5	6.0

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.0	6.5	6.5	6.5	6.5	8.0	7.5	7.5	10.0	8.0	8.5
2	6.5	6.5	6.5	6.5	6.0	6.5	8.0	7.0	7.5	9.0	8.0	8.5
3	7.0	6.0	6.5	6.0	6.0	6.0	9.0	7.0	8.0	9.5	7.5	8.5
4	7.0	6.0	6.5	6.5	6.0	6.5	8.0	7.0	7.5	8.5	7.0	7.5
5	8.0	7.0	8.0	7.0	6.5	6.5	8.0	7.0	7.5	9.5	7.0	8.0
6	7.0	6.5	6.5	7.0	6.0	6.5	8.5	6.0	7.0	10.5	7.0	8.5
7	7.0	6.5	6.5	7.0	6.0	6.5	8.5	6.5	7.5	11.0	7.5	9.0
8	7.0	6.5	6.5	8.0	7.0	8.0	8.5	7.5	8.0	11.0	8.0	9.5
9	7.0	6.5	6.5	8.0	6.5	7.0	9.5	6.5	8.0	9.5	8.5	9.0
10	7.0	6.5	6.5	8.0	6.5	7.0	10.0	7.0	8.5	9.0	8.0	8.5
11	6.5	6.0	6.5	8.0	8.0	8.0	8.5	7.5	8.0	9.5	8.0	8.5
12	6.5	6.0	6.5	8.0	8.0	8.0	9.5	7.0	8.0	9.5	8.0	9.0
13	6.5	6.0	6.5	8.0	6.5	7.0	8.5	7.0	8.0	9.5	8.5	8.5
14	6.5	6.0	6.5	8.0	6.5	7.0	8.5	7.0	7.5	9.0	8.5	8.5
15	6.5	6.0	6.5	8.0	7.0	8.0	9.5	7.0	8.0	9.0	8.5	9.0
16	6.5	6.0	6.5	8.0	7.0	8.0	7.5	6.5	6.5	9.5	9.0	9.0
17	6.5	6.0	6.5	8.0	6.5	7.0	8.5	6.5	7.5	9.5	9.0	9.0
18	7.0	6.5	6.5	8.5	6.5	8.0	9.0	7.5	8.0	11.0	8.5	9.5
19	7.0	7.0	7.0	8.5	8.0	8.0	8.5	7.5	8.0	11.5	9.0	10.0
20	7.0	7.0	7.0	8.5	8.0	8.0	8.5	7.0	7.5	12.0	9.5	10.5
21	7.0	6.5	6.5	9.0	7.0	8.0	7.5	7.0	7.5	10.5	9.5	10.0
22	7.0	6.5	6.5	9.0	7.0	8.0	7.5	7.0	7.0	10.5	9.0	10.0
23	8.0	6.5	7.0	8.0	7.0	8.0	9.5	6.5	8.0	11.0	9.0	9.5
24	8.0	6.5	7.0	8.5	7.5	8.0	10.0	7.5	8.5	10.5	9.0	9.5
25	7.0	6.5	6.5	8.0	7.5	8.0	9.5	8.5	9.0	10.5	9.0	10.0
26	8.0	7.0	8.0	8.5	7.5	8.0	8.5	8.5	8.5	10.5	9.0	10.0
27	8.0	6.5	7.0	8.5	7.5	8.0	8.5	8.0	8.0	10.5	9.5	10.0
28	6.5	6.5	6.5	8.5	8.0	8.0	8.5	8.0	8.0	10.5	9.0	9.5
29	---	---	---	9.0	8.0	8.5	9.5	7.5	8.5	10.5	8.5	9.5
30	---	---	---	8.0	7.0	8.0	9.5	7.5	8.5	12.0	8.0	10.0
31	---	---	---	9.0	6.5	7.5	---	---	---	12.5	9.0	10.5
MONTH	8.0	6.0	6.5	9.0	6.0	7.5	10.0	6.0	8.0	12.5	7.0	9.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	10.0	11.5	13.5	12.0	12.5	16.5	15.0	15.5	11.0	10.5	11.0
2	13.5	10.5	12.0	13.0	12.0	12.5	15.5	12.5	14.5	11.5	10.5	11.0
3	14.0	11.0	12.5	12.5	12.0	12.5	14.5	11.0	12.5	11.5	10.5	11.0
4	14.5	12.0	13.0	12.0	11.5	12.0	14.0	11.0	12.0	11.0	10.0	10.5
5	15.0	12.5	13.0	13.0	11.5	12.0	14.0	10.5	12.0	11.0	10.0	10.5
6	14.5	12.5	13.0	14.5	10.5	12.5	14.0	10.5	12.0	11.0	10.0	10.5
7	14.0	12.5	13.0	14.0	11.0	12.0	14.5	10.5	12.0	11.0	9.5	10.5
8	15.0	13.0	13.5	12.5	11.5	11.5	14.0	11.0	12.5	11.0	9.5	10.5
9	13.5	11.5	12.5	12.5	11.0	11.5	14.0	11.0	12.5	11.0	10.5	10.5
10	13.5	11.0	12.0	12.0	11.0	11.5	12.0	10.5	11.0	11.0	10.0	10.5
11	14.5	11.0	12.5	13.0	11.0	11.5	11.5	10.5	11.0	11.0	10.0	10.5
12	14.0	11.5	13.0	14.5	10.5	12.5	12.0	10.5	11.0	11.5	9.5	10.5
13	14.0	11.5	13.0	15.0	11.0	13.0	12.0	10.5	11.0	10.5	9.5	10.0
14	13.5	11.0	12.5	14.5	11.0	12.5	11.0	10.0	10.5	11.0	10.0	10.5
15	13.5	10.5	12.5	13.0	11.5	12.0	12.0	10.5	11.0	11.5	10.0	10.5
16	13.5	11.0	12.5	11.5	10.5	11.0	11.0	10.0	10.5	11.0	9.5	10.0
17	14.5	10.5	12.0	12.5	10.5	11.5	12.5	10.0	11.0	10.0	9.0	9.5
18	13.5	10.5	12.0	12.5	10.5	11.5	11.5	10.5	11.0	10.0	9.0	9.5
19	14.5	11.0	12.5	12.0	10.5	11.0	11.0	10.5	10.5	10.0	8.0	9.0
20	14.5	10.5	12.5	14.5	10.5	12.5	11.5	10.0	10.5	10.0	9.0	9.5
21	12.0	11.0	11.5	15.0	11.0	13.0	12.0	10.0	11.0	10.5	9.5	10.0
22	14.5	11.0	12.5	15.5	11.5	13.0	11.0	10.5	10.5	10.0	9.5	10.0
23	14.0	11.5	12.5	15.0	11.5	13.0	11.5	9.5	10.5	10.5	10.0	10.0
24	12.0	11.5	12.0	15.0	11.5	13.0	11.5	10.5	10.5	11.0	9.5	10.5
25	12.0	11.0	11.5	15.5	11.5	13.0	12.0	10.0	11.0	11.5	10.0	10.5
26	14.0	11.0	12.5	13.0	11.5	12.0	12.0	10.0	11.0	11.0	10.0	10.5
27	15.5	11.0	13.0	13.5	11.0	12.0	11.5	10.0	11.0	11.5	10.0	10.5
28	16.0	12.0	13.5	14.0	11.5	12.5	12.5	10.0	11.5	11.0	10.0	10.5
29	13.0	12.0	12.5	15.5	11.5	13.5	13.0	10.0	11.5	11.5	10.0	10.5
30	14.0	12.0	13.0	15.5	11.5	13.5	12.0	10.5	11.0	11.5	10.5	11.0
31	---	---	---	16.5	11.5	13.5	11.0	10.5	11.0	---	---	---
MONTH	16.0	10.0	12.5	16.5	10.5	12.5	16.5	9.5	11.5	11.5	8.0	10.5
YEAR	16.5	4.5	8.5									

12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW¼NW¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft (38 m) downstream from bridge on Mill Avenue at Renton and at mile 1.6 (2.6 km).

DRAINAGE AREA.--184 mi² (477 km²), includes 3.67 mi² (9.51 km²) in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi² (4.9 km²) from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year.

REVISED RECORDS.--WSP 1316: 1901-2. WSP 1932: Drainage area. WDR WA-75-1: 1972-1974.

GAGE.--Water-stage recorder. Datum of gage is 15.20 ft (4.633 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1908, nonrecording gages within 1 mi (1.6 km) of present site, at datum 10.67 ft (3.252 m) National Geodetic Vertical Datum of 1929. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft (213 m)) upstream at datum 20.13 ft (6.136 m) National Geodetic Vertical Datum of 1929 and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft (5.831 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Flow partly regulated by Chester Morse Lake for operation of powerplant at Cedar Falls 32.1 mi (51.6 km) upstream from gage. An average daily discharge of about 169 ft³/s (4.79 m³/s) was diverted during the year at Landsburg by the city of Seattle for municipal use.

AVERAGE DISCHARGE.--33 years (water years, 1946-78), 704 ft³/s (19.94 m³/s), 510,000 acre-ft/yr (629 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s (249 m³/s), Dec. 4, 1975, gage height, 14.14 ft (4.310 m) from outside high-water mark; minimum daily, 30 ft³/s (0.85 m³/s) July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,670 ft³/s (161 m³/s) Dec. 3, results of discharge measurement at peak flow during period of no gage-height record, gage height (by levels) 12.56 ft (3.828 m); minimum, 76 ft³/s (2.15 m³/s) Aug. 8, 9, 10, gage height, 6.52 ft (1.987 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	418	1850	1040	736	544	400	466	659	258	278	149
2	258	604	4000	1020	715	586	395	436	617	254	436	210
3	275	518	5330	1060	771	574	400	460	659	238	140	178
4	285	817	4980	1110	743	420	410	472	785	230	98	178
5	299	422	4100	1170	617	400	436	436	844	226	86	186
6	313	393	3800	1160	771	560	420	436	806	194	86	194
7	331	482	3500	1070	828	490	430	490	750	206	78	194
8	321	498	3300	1180	900	436	425	502	778	194	78	182
9	340	460	2900	1140	836	502	415	562	757	190	78	214
10	330	443	2800	1180	694	568	405	532	659	186	78	230
11	366	425	3000	1080	813	405	472	460	652	167	78	210
12	345	437	3200	988	598	496	520	436	715	158	86	198
13	348	441	3380	1060	617	598	508	454	757	149	89	190
14	345	550	3820	988	729	586	472	496	792	140	83	202
15	335	777	3880	852	785	425	436	586	771	131	95	210
16	331	958	3700	868	638	415	592	932	729	146	101	262
17	329	967	3000	877	604	442	544	892	550	186	95	310
18	316	941	2540	767	490	472	526	940	502	210	92	375
19	331	932	2120	654	436	395	478	1000	472	178	95	322
20	340	911	1800	526	448	436	502	980	415	210	92	298
21	336	900	1670	574	580	454	430	956	390	125	92	294
22	340	891	1500	550	598	448	484	916	385	101	86	360
23	340	906	1350	701	617	496	556	722	448	104	89	764
24	369	953	1270	680	544	415	580	645	340	98	113	592
25	465	1200	1160	604	715	472	544	556	330	98	107	436
26	449	1970	1120	916	496	472	520	538	322	122	101	340
27	397	1620	1080	792	568	436	526	538	306	122	95	310
28	374	1570	1060	701	638	430	568	466	294	131	89	310
29	394	1660	1000	514	---	415	556	436	274	149	89	314
30	409	1650	1000	598	---	400	502	454	274	149	92	322
31	377	---	1040	694	---	415	---	508	---	143	101	---
TOTAL	10642	25714	80250	27114	18525	14603	14452	18703	17032	5193	3396	8534
MEAN	343	857	2589	875	662	471	482	603	568	168	110	284
MAX	465	1970	5330	1180	900	598	592	1000	844	258	436	764
MIN	254	393	1080	514	436	395	395	436	274	98	78	149
AC-FT	21110	51000	159200	53780	36740	28970	28670	37100	33780	10300	6740	16930

CAL YR 1977 TOTAL 220661 MEAN 605 MAX 5330 MIN 83 AC-FT 437700
WTR YR 1978 TOTAL 244158 MEAN 669 MAX 5330 MIN 78 AC-FT 484300

NOTE.--No gage-height record Dec. 2-12.

12119000 CEDAR RIVER AT RENTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-71, March to September 1978.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1965 to February 1967, March 1978 to September 1978.

INSTRUMENTATION.--Temperature recorder for period of daily record.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 24.0°C Aug. 8, 1978; minimum, 2.0°C Dec. 24, 1965, Feb. 1, 1966.

EXTREMES DURING PERIOD March 22 to September 30, 1978.--
WATER TEMPERATURE: Maximum, 24.0°C Aug. 8; minimum, 6.5°C Apr. 6, 7.

TEMPERATURE, (DEG C) MARCH TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1				---	---	---	10.0	8.5	9.0	12.5	9.0	10.5
2				---	---	---	10.0	8.0	8.5	12.0	9.5	10.5
3				---	---	---	11.5	7.5	9.5	12.0	9.0	10.5
4				---	---	---	10.0	8.5	9.0	12.0	8.5	9.5
5				---	---	---	10.0	7.5	8.5	11.5	7.5	9.5
6				---	---	---	10.0	6.5	8.0	13.5	8.0	10.5
7				---	---	---	11.0	6.5	9.0	14.0	9.0	11.5
8				---	---	---	11.0	8.5	9.5	13.5	9.5	11.5
9				---	---	---	12.5	7.5	9.5	11.5	10.0	10.5
10				---	---	---	12.5	8.0	10.0	10.0	9.0	9.5
11				---	---	---	11.5	8.5	10.0	12.0	9.0	10.5
12				---	---	---	11.5	8.0	9.5	12.0	9.0	10.5
13				---	---	---	10.5	8.5	9.0	11.0	9.5	10.5
14				---	---	---	9.5	8.0	8.5	10.5	9.5	10.0
15				---	---	---	11.5	8.0	9.5	11.0	9.5	10.0
16				---	---	---	9.0	7.5	8.0	11.0	9.5	10.0
17				---	---	---	9.5	7.0	8.0	11.5	9.5	10.5
18				---	---	---	11.5	8.5	10.0	13.5	8.5	11.0
19				---	---	---	10.5	9.0	9.5	14.5	9.5	12.0
20				---	---	---	11.0	8.5	9.5	15.0	10.0	12.5
21				---	---	---	9.0	8.0	8.5	12.5	10.0	11.0
22				11.5	8.0	9.5	9.0	8.0	8.5	12.5	9.5	10.5
23				9.0	8.5	9.0	12.0	7.5	9.5	12.5	9.0	11.0
24				10.0	8.0	9.0	12.0	9.0	10.5	12.5	9.5	11.0
25				9.0	8.5	8.5	12.0	9.5	10.5	12.5	9.5	11.0
26				11.0	8.0	9.5	10.5	9.5	10.0	12.0	10.5	11.0
27				10.5	9.0	9.5	10.0	9.5	9.5	12.0	10.5	11.0
28				10.0	9.0	9.5	10.5	9.0	9.5	12.5	10.0	11.0
29				11.0	8.5	10.0	12.0	8.5	10.0	13.0	10.0	11.0
30				9.5	8.0	9.0	12.0	8.5	10.0	15.0	9.0	11.5
31				11.5	7.0	9.0	---	---	---	16.0	10.0	13.0
MONTH				11.5	7.0	9.5	12.5	6.5	9.5	16.0	7.5	11.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.0	11.0	13.5	18.5	14.0	15.5	17.5	14.0	15.5	16.0	14.5	15.0
2	17.0	11.5	14.0	15.5	14.0	14.5	18.5	15.0	16.5	16.0	14.0	15.0
3	17.0	12.5	14.5	14.5	13.5	14.0	21.5	15.0	18.0	15.0	13.5	14.0
4	17.5	12.5	15.0	13.5	12.5	13.0	21.5	16.0	18.5	14.5	13.0	13.5
5	17.5	12.5	15.0	16.0	12.5	14.0	21.5	15.0	18.0	14.5	12.5	13.5
6	16.5	12.5	14.5	19.5	13.0	16.0	22.0	15.0	18.5	15.0	12.5	13.5
7	15.0	12.5	14.0	19.0	14.0	16.0	23.0	15.5	19.0	15.0	12.0	13.5
8	16.5	13.0	14.5	16.0	14.0	15.0	24.0	16.5	20.0	14.5	12.0	13.5
9	15.0	13.0	14.0	16.0	13.0	14.5	23.5	17.0	20.0	14.5	13.0	13.5
10	15.0	12.5	13.5	15.5	13.0	14.0	19.0	16.0	17.5	15.0	12.5	13.5
11	16.5	12.5	14.0	16.5	13.0	14.5	17.0	15.5	16.5	15.0	12.5	13.5
12	15.0	13.0	13.5	20.0	12.5	16.0	19.5	15.0	16.5	15.5	12.5	13.5
13	15.0	12.5	13.5	21.0	14.0	17.5	19.5	15.0	17.0	14.0	11.5	12.5
14	14.5	12.0	13.0	21.0	15.0	18.0	16.5	14.5	15.5	14.5	12.0	13.0
15	14.0	12.0	13.0	18.5	15.0	16.5	18.5	15.0	16.5	15.5	12.5	14.0
16	14.0	12.0	13.0	15.5	14.0	14.5	16.5	14.0	15.0	13.5	11.0	12.5
17	17.0	12.0	14.5	17.0	13.0	14.5	18.5	13.0	15.5	12.0	10.5	11.5
18	16.0	12.5	14.5	18.0	13.0	14.5	16.0	14.0	15.0	12.5	9.5	11.0
19	17.5	13.0	15.0	16.0	13.0	14.5	16.5	14.0	15.0	13.5	9.5	11.5
20	18.0	12.5	15.5	19.5	12.5	16.0	16.0	13.5	15.0	12.0	10.5	11.5
21	15.0	13.5	14.0	22.0	14.5	18.0	18.0	14.0	15.5	13.0	11.0	12.0
22	16.0	12.5	14.0	23.0	15.5	19.5	15.5	14.0	15.0	13.0	11.5	12.0
23	17.0	13.0	14.5	22.5	16.5	19.5	15.5	12.5	14.0	12.5	11.5	12.0
24	15.0	13.0	14.0	21.5	15.5	18.0	16.0	13.5	14.5	13.0	11.5	12.5
25	14.0	12.5	13.0	23.0	15.5	19.0	17.0	13.0	15.0	13.5	12.0	12.5
26	18.0	11.5	14.5	19.0	16.5	17.5	18.5	12.5	15.5	13.5	12.0	13.0
27	19.5	13.0	16.0	19.0	15.0	16.5	18.0	13.0	15.5	14.5	12.0	13.0
28	20.5	14.0	17.5	20.5	14.5	17.5	19.5	14.0	16.5	13.5	12.0	12.5
29	17.0	14.0	15.0	21.0	14.5	18.0	20.0	14.0	17.0	15.0	11.5	13.0
30	17.5	13.5	15.0	21.0	15.0	18.0	18.5	15.0	17.0	14.5	11.5	13.0
31	---	---	---	18.5	15.0	16.5	16.5	15.0	16.0	---	---	---
MONTH	20.5	11.0	14.5	23.0	12.5	16.0	24.0	12.5	16.5	16.0	9.5	13.0

12119007 CEDAR RIVER AT LOGAN STREET AT RENTON, WA

LOCATION.--Lat 47°29'09", long 122°12'28", in NE¼NE¼ sec.18, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, at Logan Avenue bridge near mouth, 0.2 mi (0.3 km) downstream from gaging station at Renton and at mile 1.0 (1.6 km).

PERIOD OF RECORD.--Water years 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
05...	1025	300	84	7.4	9.5	15	3
NOV							
30...	0955	1610	54	6.9	6.3	35	13
DEC							
21...	1105	1660	56	7.1	5.8	40	13
JAN , 1978							
18...	1105	580	66	7.3	5.8	10	2
FEB							
23...	1040	520	55	7.4	7.3	15	3
MAR							
08...	1120	448	76	7.6	7.8	15	3
APR							
05...	1115	442	79	7.9	9.1	25	2
MAY							
03...	1110	484	74	7.5	10.2	40	2
JUN							
21...	1050	390	74	7.3	13.6	5	1
JUL							
19...	1115	164	79	8.0	15.8	15	1
AUG							
09...	1100	78	90	7.7	19.3	20	1
SEP							
20...	1155	306	77	7.8	11.6	0	3

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
05...	12.3	.29	.11	.03	.01	.03
NOV						
30...	12.5	.41	.15	.04	.00	.00
DEC						
21...	12.4	.41	.13	.04	.01	.03
JAN , 1978						
18...	--	.43	.06	.02	.01	.03
FEB						
23...	12.1	.30	.08	.02	.00	.00
MAR						
08...	12.2	.43	.04	.03	.00	.00
APR						
05...	12.3	.35	.06	.02	.00	.00
MAY						
03...	12.0	.33	.05	.01	.00	.00
JUN						
21...	10.5	.18	.06	.01	.00	.00
JUL						
19...	11.8	.14	.07	.01	.00	.00
AUG						
09...	10.8	.25	.06	.02	.00	.00
SEP						
20...	12.5	.29	.03	.02	.00	.00

12119300 MAY CREEK NEAR ISSAQUAH, WA

LOCATION.--Lat 47°29'53", long 122°05'53", in SW¼NW¼ sec.7, T.23 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank upstream from State Highway 900, 3.6 mi (5.8 km) southwest of Issaquah, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--2.82 mi^2 (7.30 km^2).

PERIOD OF RECORD.--May to September 1978.

GAGE.--Water-stage recorder. Altitude of gage 325 ft (99.1 m), from topographic map.

REMARKS.--Records good. Figures of discharge include those for side channel (12119302) entering stream 30 ft (9.14 m) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period May to September 13 ft^3/s (0.368 m^3/s) on Sept. 23, gage height, 1.12 ft (0.341 m), maximum gage height, 1.15 ft (0.351 m) June 12; minimum daily, 0.33 ft^3/s (0.009 m^3/s) Aug. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	2.1	.58	.46	.99
2								---	2.0	.61	.43	1.3
3								---	2.0	.61	.43	.75
4								---	1.7	.58	.37	.70
5								---	1.5	.58	.35	.83
6								---	1.3	.55	.35	1.0
7								---	1.2	.52	.35	.65
8								3.3	1.2	.52	.35	.62
9								3.2	1.7	.52	.35	1.6
10								3.3	1.2	.58	.35	1.5
11								3.5	1.0	.55	.40	1.3
12								2.9	2.3	.49	.49	.82
13								5.0	3.3	.40	.46	.73
14								5.9	2.3	.37	.46	.60
15								5.6	1.5	.40	.70	.60
16								4.6	1.2	.82	.52	.54
17								4.1	1.0	.64	.49	.66
18								3.7	.88	.52	.46	.57
19								3.2	.80	.49	.58	.51
20								2.8	.70	.46	.46	.51
21								2.6	.70	.46	.37	.63
22								2.4	.70	.43	.37	2.5
23								2.3	.67	.40	.37	12
24								2.1	.64	.40	.64	6.1
25								2.1	.67	.37	.64	3.4
26								2.1	.67	.86	.43	2.6
27								2.6	.64	.74	.37	2.1
28								2.5	.58	.55	.35	2.0
29								2.7	.58	.46	.33	1.7
30								2.2	.61	.46	.33	1.5
31								2.1	---	.43	.52	---
TOTAL								---	37.34	16.35	13.53	51.31
MEAN								---	1.24	.53	.44	1.71
MAX								---	3.3	.86	.70	12
MIN								---	.58	.37	.33	.51
CFSM								---	.44	.19	.16	.61
IN.								---	.49	.22	.18	.68
AC-FT								---	74	32	27	102

12119375 MAY CREEK AT RENTON, WA

LOCATION.--Lat 47°31'02", long 122°08'55", in SW¼SE¼ sec.34, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank at downstream side of 143rd Avenue S.E. road crossing (private bridge), 2 mi (3.2 km) northeast of Renton.

DRAINAGE AREA.--7.57 mi² (19.6 km²).

PERIOD OF RECORD.--January to September 1978.

GAGE.--Water-stage recorder. Altitude of gage is 300 ft (91.4 m), from topographic map.

REMARKS.--Records good.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period January to September, 37 ft³/s (1.05 m³/s) Apr. 16, 20, 22; maximum gage height, 1.52 ft (0.463 m) Apr. 20, 22; minimum, 0.59 ft³/s (0.017 m³/s) Aug. 13, gage height, 0.45 ft (0.137 m).

DISCHARGE, IN CUBIC FEET PER SECOND, JANUARY TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				---	16	12	11	16	3.1	1.7	1.2	2.0
2				---	31	11	11	14	2.8	1.7	1.2	4.5
3				---	34	10	11	13	2.6	1.8	1.2	3.4
4				---	29	10	14	13	2.3	1.6	1.1	3.1
5				---	25	9.6	18	11	2.2	1.4	.86	3.1
6				---	26	9.0	15	9.9	2.0	1.3	.86	3.2
7				---	24	15	12	8.7	1.9	1.2	.79	2.9
8				---	28	14	11	7.5	1.9	1.2	.79	2.5
9				---	26	12	10	7.5	2.3	1.2	.79	4.3
10				---	22	10	9.6	7.8	2.5	1.3	.79	7.0
11				---	18	13	9.3	9.0	2.2	1.4	.86	4.9
12				---	16	25	8.4	7.5	2.5	1.4	.94	3.5
13				---	14	21	8.1	12	4.3	1.3	.86	3.1
14				---	13	26	8.1	16	3.1	1.2	.86	2.6
15				---	17	21	8.4	16	2.6	1.2	1.1	2.5
16				---	13	18	31	13	2.3	1.6	1.2	2.5
17				---	12	15	23	11	2.2	1.8	1.1	2.5
18				---	12	14	20	9.3	2.0	1.6	1.1	2.5
19				---	12	12	25	8.4	1.8	1.5	1.2	2.2
20				11	11	11	32	7.3	1.7	1.5	1.2	2.0
21				21	10	10	26	6.3	1.7	1.4	1.2	2.5
22				17	9.6	9.6	31	5.8	1.6	1.3	1.2	5.8
23				14	11	11	31	5.3	1.6	1.3	1.2	25
24				13	10	12	25	4.7	1.6	1.2	1.6	18
25				12	15	18	21	4.5	1.6	1.2	1.8	10
26				19	19	17	19	4.3	1.6	1.4	1.6	8.1
27				16	15	14	23	4.7	1.5	2.5	1.3	7.0
28				16	14	15	25	4.7	1.4	1.8	1.1	6.0
29				14	---	14	21	4.5	1.6	1.3	1.2	5.3
30				13	---	13	18	3.9	1.7	1.2	1.2	4.9
31				14	---	12	---	3.4	---	1.2	1.3	---
TOTAL	---	---	---	---	502.6	434.2	535.9	270.0	64.2	44.7	34.70	156.9
MEAN	---	---	---	---	18.0	14.0	17.9	8.71	2.14	1.44	1.12	5.23
MAX	---	---	---	---	34	26	32	16	4.3	2.5	1.8	25
MIN	---	---	---	---	9.6	9.0	8.1	3.4	1.4	1.2	.79	2.0
CFSM	---	---	---	---	2.38	1.85	2.37	1.15	.28	.19	.15	.69
IN.	---	---	---	---	2.47	2.13	2.63	1.33	.32	.22	.17	.77
AC-FT	---	---	---	---	997	861	1060	536	127	89	69	311

12119450 HONEY CREEK NEAR RENTON, WA

LOCATION.--Lat 47°30'48", long 122°10'41", in NE¼NW¼ sec.4, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank upstream from county road (120th Place S.E.) crossing, 1.1 mi (1.8 km) northeast of Renton.

DRAINAGE AREA.--0.70 mi² (1.8 km²).

PERIOD OF RECORD.--April to September 1978.

GAGE.--Water-stage recorder. Altitude of gage 200 ft (61 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period April to September, 23 ft³/s (0.651 m³/s) Sept. 22, gage height, 1.53 ft (0.466 m); minimum, 0.58 ft³/s (0.016 m³/s) part or all of many days June to August 1978.

DISCHARGE, IN CUBIC FEET PER SECOND, APRIL TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							---	1.8	.66	.66	.66	2.3
2							---	1.6	.66	.66	.84	2.5
3							---	1.7	.66	.66	.66	1.3
4							---	1.5	.66	.66	.66	.94
5							---	1.2	.66	.66	.66	1.2
6							---	.98	.66	.66	.66	1.2
7							---	.88	.66	.66	.66	.84
8							---	.79	.66	.66	.66	1.4
9							---	.93	1.2	.66	.58	3.6
10							---	1.0	.66	.66	.66	1.4
11							---	.98	.66	.66	.66	.84
12							---	1.0	1.2	.66	.74	.74
13							1.7	1.5	.74	.66	.66	.74
14							1.6	1.8	.74	.66	.74	.66
15							1.8	1.4	.66	.66	.84	.74
16							4.3	1.2	.66	1.9	.66	.84
17							2.5	1.1	.66	.66	.66	.74
18							2.2	1.1	.66	.66	.66	.66
19							2.6	1.0	.66	.66	.66	.66
20							3.4	.98	.66	.58	.58	.94
21							2.6	.93	.66	.58	.58	1.3
22							3.7	.92	.66	.58	.66	5.0
23							2.9	.90	.66	.58	.66	5.0
24							2.4	.86	.66	.58	1.6	1.6
25							2.1	.81	.66	.58	1.1	1.1
26							2.0	.76	.66	2.0	.66	.94
27							2.5	.80	.66	.84	.58	1.2
28							2.9	.77	.66	.66	.58	1.1
29							2.2	.73	.66	.66	.58	.74
30							2.0	.71	.66	.66	1.1	.94
31							---	.68	---	.66	.84	---
TOTAL							---	33.31	21.04	22.74	22.50	43.16
MEAN							---	1.07	.70	.73	.73	1.44
MAX							---	1.8	1.2	2.0	1.6	5.0
MIN							---	.68	.66	.58	.58	.66
CFSM							---	1.53	1.00	1.04	1.04	2.06
IN.							---	1.77	1.12	1.21	1.19	2.29
AC-FT							---	66	42	45	45	86

12119600 MAY CREEK AT MOUTH, NEAR RENTON, WA

LOCATION.--Lat 47°31'48", long 122°12'00", in NE¼NW¼ sec.32, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank at road crossing, 0.21 mi (0.34 km) upstream from mouth, and 2 mi (3.2 km) north of Renton.

DRAINAGE AREA.--12.7 mi² (32.9 km²).

PERIOD OF RECORD.--August 1964 to September 1971, water years 1973-77 (annual maximum), January to September 1978.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Altitude of gage is 25 ft (7.6 m) from topographic map.

REMARKS._-Records good. Some minor diversions for irrigation above station. No regulation.

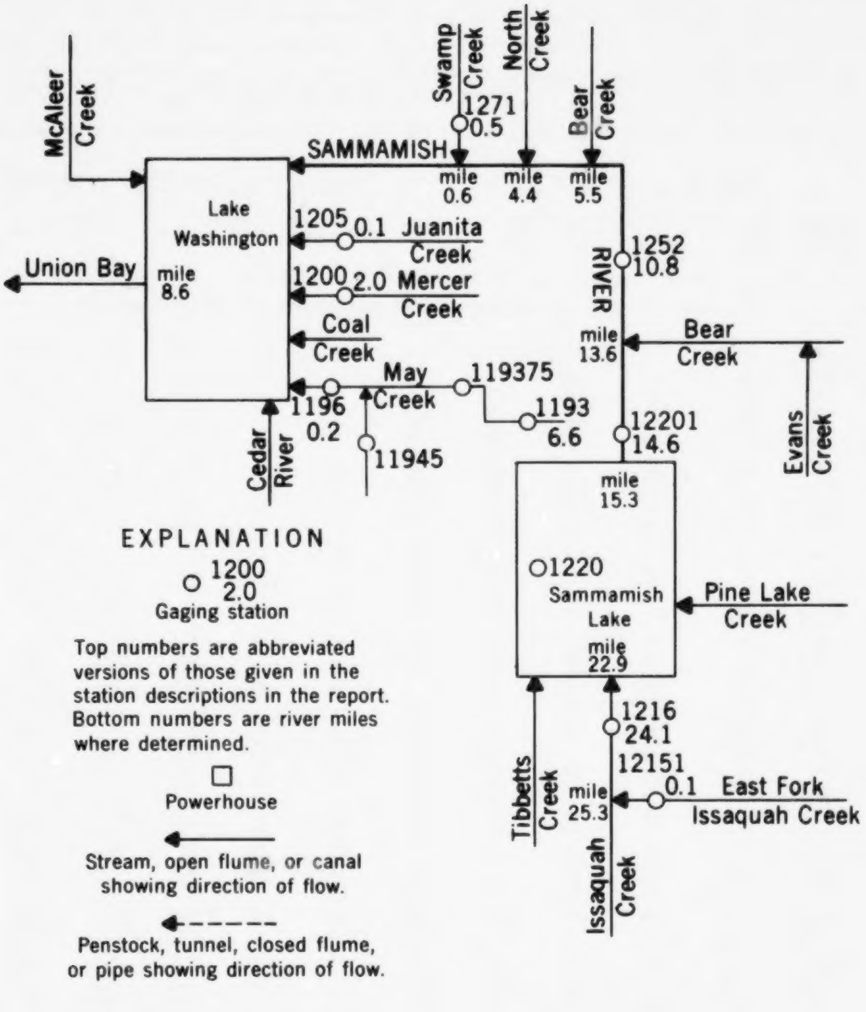
AVERAGE DISCHARGE.-- 7 years (water years 1965-71), 21.7 ft³/s (0.61 m³/s), 23.20 in/yr (589 mm/yr), 15,720 acre-ft/yr (19.4 hm³/yr).,

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 510 ft³/s (14.4 m³/s) Dec. 3, 1975, gage height, 4.20 ft (1.280 m), possibly influenced by a mud slide washout upstream; minimum recorded, 2.2 ft³/s (0.06 m³/s) Aug. 18, 1967, gage height, 1.18 ft (0.360 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period January to September 1978, also maximum for the year, 77 ft³/s (2.18 m³/s) Sept. 22, gage height, 2.64 ft (0.805 m); minimum during period January to September 1978, also minimum for the year 4.0 ft³/s (0.113 m³/s) Aug. 7, gage height, 1.46 ft (0.445 m).

DISCHARGE, IN CUBIC FEET PER SECOND, JANUARY TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				---	33	24	19	24	7.4	5.2	4.7	6.8
2				---	59	22	19	22	7.0	4.7	4.8	11
3				---	61	20	19	22	7.0	4.8	4.5	8.0
4				---	49	20	27	20	6.6	5.0	4.5	7.3
5				---	45	18	30	18	6.8	5.0	4.4	7.6
6				---	46	17	24	16	6.5	4.8	4.4	7.6
7				---	44	32	21	14	6.4	4.8	4.4	6.6
8				---	50	30	19	13	6.5	4.8	4.4	7.1
9				---	45	25	17	14	7.8	4.8	4.5	14
10				---	39	22	16	14	6.6	5.0	4.5	13
11				---	34	26	16	15	6.6	5.1	4.7	9.6
12				---	30	46	15	14	8.7	5.3	4.8	7.8
13				38	26	40	14	22	8.7	6.2	4.8	6.8
14				40	26	44	14	28	7.2	5.7	4.7	6.4
15				35	33	35	15	26	6.6	4.9	5.2	6.2
16				30	25	32	50	20	6.3	7.4	4.7	6.2
17				26	23	28	38	18	6.1	5.8	4.7	6.4
18				23	24	25	32	16	5.9	5.5	4.8	6.2
19				21	23	22	40	14	5.8	5.7	5.0	5.9
20				20	20	20	52	12	5.7	5.5	5.0	6.4
21				40	19	18	42	11	5.6	5.2	4.7	7.1
22				33	18	17	53	10	5.5	5.9	5.0	22
23				26	22	20	50	9.0	5.5	7.2	4.8	51
24				23	20	23	38	8.5	5.5	5.5	6.8	35
25				23	30	34	33	7.8	5.5	5.1	6.1	20
26				36	35	30	29	7.6	5.6	10	5.3	15
27				30	28	25	35	8.5	5.4	6.2	5.0	13
28				28	26	27	40	8.5	5.1	5.2	4.5	12
29				26	---	25	33	8.0	5.3	4.8	4.7	9.9
30				23	---	23	28	7.8	5.5	4.5	5.3	9.3
31				25	---	21	---	7.6	---	4.5	5.3	---
TOTAL				---	933	811	878	456.3	190.7	170.1	151.0	351.2
MEAN				---	33.3	26.2	29.3	14.7	6.36	5.49	4.87	11.7
MAX				---	61	46	53	28	8.7	10	6.8	51
MIN				---	18	17	14	7.6	5.1	4.5	4.4	5.9
CFSM				---	2.62	2.06	2.31	1.16	.50	.43	.38	.92
IN.				---	2.73	2.38	2.57	1.34	.56	.50	.44	1.03
AC-FT				---	1850	1610	1740	905	378	337	300	697


McAleer Creek
Swamp Creek
1271
0.5
North Creek
Bear Creek
SAMMAMISH
mile 0.6
mile 4.4
mile 5.5
Lake Washington
mile 8.6
Union Bay
1205
0.1
Juanita Creek
1200
2.0
Mercer Creek
Coal Creek
May Creek
119375
1196
0.2
1193
6.6
11945
Cedar River
1252
10.8
RIVER
mile 13.6
Bear Creek
Evans Creek
12201
14.6
mile 15.3
1220
Sammamish Lake
mile 22.9
Pine Lake Creek
1216
24.1
12151
0.1
East Fork Issaquah Creek
mile 25.3
Tibbetts Creek
Issaquah Creek
EXPLANATION
1200
2.0
Gaging station
Powerhouse

Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.

Stream, open flume, or canal showing direction of flow.

Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 14. Gaging stations in Lake Washington basin (below Cedar River).

12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW¼NW¼ sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft (12 m) upstream from Northern Pacific Railway trestle, 1.2 mi (1.9 km) southeast of Bellevue, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--12.0 mi² (31.1 km²)

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 17.11 ft (5.215 m) National Geodetic Vertical Datum of 1929 (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft (183 m) downstream at different datums.

REMARKS.--Records fair. Some small diversions for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--23 years, 22.3 ft³/s (0.632 m³/s), 25.24 in/yr (641 mm/yr), 16,160 acre-ft/yr (19.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 402 ft³/s (11.4 m³/s) Mar. 6, 1972, gage height, 8.68 ft (2.646 m), from high-water mark in well, from rating curve extended above 180 ft³/s (5.10 m³/s) on basis of computation of peak flow through culvert; minimum, 1.9 ft³/s (0.054 m³/s) Aug. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 170 ft³/s (4.81 m³/s) and maximum (*) from peak-stage indicator:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	unknown	194	5.49	3.22	0.981
Dec. 11	unknown	269	7.62	3.97	1.210
Dec. 15	unknown	212	6.00	3.40	1.036
Jan. 4	unknown	unknown	---	unknown	---
Sept. 22	unknown	*306	8.67	*4.28	1.305

Minimum discharge, 6.2 ft³/s (0.18 m³/s) Aug. 14, gage height, 0.31 (0.094 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	28	29	15	46	18	17	18	9.8	7.9	7.9	33
2	9.8	23	25	14	79	16	16	17	9.1	11	8.2	48
3	9.4	19	19	59	40	15	16	20	9.1	9.4	7.9	17
4	9.1	16	18	120	26	15	31	19	8.8	8.8	7.6	33
5	9.1	22	18	87	26	15	29	15	8.5	8.5	7.4	22
6	10	28	48	55	37	14	19	15	8.5	8.2	6.8	17
7	11	40	23	72	35	60	17	14	8.5	7.9	6.5	14
8	10	30	18	110	39	41	15	13	8.5	8.5	6.8	12
9	11	28	17	75	40	23	15	16	13	7.9	6.5	26
10	9.1	30	85	62	24	19	15	15	8.8	14	7.1	22
11	8.8	26	170	48	21	26	25	16	11	9.4	7.4	18
12	11	16	130	37	19	40	14	13	17	8.2	9.1	14
13	21	26	100	37	17	23	17	26	18	7.9	7.6	12
14	11	37	80	43	18	22	18	46	11	7.9	7.4	11
15	9.8	36	128	35	29	18	19	23	10	7.9	14	15
16	13	27	88	29	18	17	91	16	9.8	27	17	19
17	9.8	20	46	25	17	16	30	14	9.4	13	8.8	15
18	9.1	15	41	22	24	16	27	13	8.8	10	8.2	13
19	9.8	14	28	18	19	16	57	12	8.5	9.4	11	11
20	9.4	12	23	17	17	15	46	12	8.2	8.8	9.8	11
21	11	11	21	61	16	15	26	11	9.1	7.9	8.2	21
22	9.1	9.5	20	25	15	14	55	10	8.5	7.6	9.8	45
23	19	24	18	19	24	20	28	13	7.9	7.4	9.1	75
24	27	26	17	18	19	21	21	10	7.9	7.4	26	40
25	32	90	17	21	39	54	18	10	7.9	7.4	15	28
26	22	40	16	45	34	28	19	11	7.9	20	9.4	21
27	13	27	15	22	22	20	31	14	7.9	21	8.2	17
28	14	25	15	20	20	26	37	12	7.9	10	7.9	15
29	42	33	30	18	---	19	20	16	8.2	9.1	7.9	13
30	27	19	20	17	---	21	18	11	8.2	7.9	8.5	12
31	16	---	16	22	---	19	---	10	---	7.9	14	---
TOTAL	444.3	797.5	1339	1268	780	702	807	481	285.7	315.2	297.0	670
MEAN	14.3	26.6	43.2	40.9	27.9	22.6	26.9	15.5	9.52	10.2	9.58	22.3
MAX	42	90	170	120	79	60	91	46	18	27	26	75
MIN	8.8	9.5	15	14	15	14	14	10	7.9	7.4	6.5	11
CFSM	1.19	2.22	3.60	3.41	2.33	1.88	2.24	1.29	.79	.85	.80	1.86
IN.	1.38	2.47	4.15	3.93	2.42	2.18	2.50	1.49	.89	.98	.92	2.08
AC-FT	881	1580	2660	2520	1550	1390	1600	954	567	625	589	1330

WTR YR 1978 TOTAL 8186.7 MEAN 22.4 MAX 170 MIN 6.5 CFSM 1.87 IN 25.38 AC-FT 16240
CAL YR 1977 TOTAL 6916.0 MEAN 18.9 MAX 170 MIN 5.6 CFSM 1.58 IN 21.44 AC-FT 13720

12120500 JUANITA CREEK NEAR KIRKLAND, WA

LOCATION.--Lat 47°42'20", long 122°12'56", in SW¼SE¼ sec.30, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 0.1 mi (0.2 km) upstream from mouth and Lake Washington, and 1.7 mi (2.7 km) north of Kirkland.

DRAINAGE AREA.--6.69 mi² (17.33 km²). Prior to May 3, 1972, 6.43 mi² (16.65 km²).

PERIOD OF RECORD.--June to October 1945, September 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Recording gage. Altitude of gage is 20 ft (6 m), from topographic map. Prior to Oct. 2, 1945, water-stage recorder at site 1,500 ft (457 m) upstream at different datum. Sept. 1, 1963 to May 2, 1972, water-stage recorder and concrete control at site 1,000 ft (305 m) upstream at different datum. May 3, 1972 to Oct. 27, 1972 nonrecording gage at present site and different datum.

REMARKS.--Records fair. No known regulation. Probably several small diversions above station for domestic use.

AVERAGE DISCHARGE:--13 years (water years 1964-72, 1975-78) 10.7 ft³/s (0.303 m³/s), 21.72 in/yr (552 mm/yr), 7,750 acre-ft/yr (9.56 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 257 ft³/s (7.28 m³/s) Dec. 4, 1975; maximum gage height, 5.09 ft (1.551 m), Dec. 15, 1973, backwater from debris, minimum discharge, 0.58 ft³/s (0.016 m³/s) Sept. 13, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 228 ft³/s (6.46 m³/s) Dec. 10, gage height, 4.06 ft (1.237 m); minimum discharge, 2.6 ft³/s (0.074 m³/s) Aug. 2, gage height, 0.46 ft (0.140 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	16	21	8.0	29	8.3	8.1	8.0	4.6	3.4	3.6	21
2	5.0	12	16	7.6	31	7.7	7.4	8.8	4.1	5.4	3.4	22
3	4.6	9.3	14	47	18	7.4	6.8	12	3.9	3.6	3.4	8.4
4	4.5	8.1	12	57	13	7.3	9.7	15	4.6	3.6	3.4	18
5	4.3	13	13	48	14	7.3	12	9.7	4.4	3.4	3.1	12
6	5.3	18	30	26	13	6.9	8.1	7.4	4.6	3.4	3.1	8.4
7	4.6	23	16	34	18	27	7.1	7.1	4.6	3.4	3.1	5.4
8	4.6	15	13	57	16	15	6.8	6.5	4.4	3.6	3.1	5.6
9	4.5	14	12	30	17	12	6.8	7.0	6.2	3.4	3.1	17
10	4.4	16	74	29	11	8.7	7.4	7.7	5.4	16	3.4	9.7
11	4.3	11	101	24	9.9	12	10	6.8	4.6	11	3.9	5.6
12	5.1	10	66	21	9.6	9.2	7.4	6.8	6.5	5.9	3.4	4.9
13	5.0	15	56	20	8.1	10	8.1	16	6.5	3.6	3.4	4.6
14	4.5	30	35	17	13	8.8	8.7	35	6.2	3.6	5.6	4.6
15	4.4	14	74	16	15	7.5	13	16	5.9	3.4	4.9	9.1
16	4.8	11	52	14	9.8	7.2	36	9.7	5.6	13	12	7.1
17	4.3	9.0	29	11	8.9	6.7	18	8.4	5.1	4.6	4.4	5.6
18	4.4	8.4	29	10	13	6.5	16	7.1	5.4	4.1	4.4	4.6
19	4.4	7.4	19	9.7	10	6.3	27	6.5	5.6	3.9	14	4.4
20	4.3	6.5	15	9.7	10	6.2	22	5.9	4.6	3.6	5.1	5.4
21	4.4	6.2	14	26	9.6	6.2	15	5.6	5.4	3.6	4.9	7.7
22	4.3	6.0	12	13	9.2	6.2	29	5.6	5.1	3.6	4.1	42
23	6.5	10	11	11	11	7.9	17	7.0	4.4	3.9	4.6	41
24	11	9.7	9.7	11	9.0	7.9	12	6.5	4.6	3.9	9.4	13
25	13	54	9.2	16	17	26	11	6.5	5.1	3.9	4.9	9.1
26	7.8	27	8.6	24	12	14	10	6.5	4.1	13	4.1	7.4
27	6.2	17	8.2	14	9.4	10	19	6.8	4.1	5.9	3.6	6.5
28	7.1	20	8.2	12	10	11	12	6.2	3.9	4.4	3.6	8.1
29	17	19	13	11	---	9.1	9.4	5.1	4.6	3.9	3.6	5.4
30	16	13	10	10	---	10	8.3	4.6	3.6	3.6	3.4	7.1
31	8.1	---	8.6	13	---	9.1	---	4.6	---	3.4	4.1	---
TOTAL	193.8	448.6	809.5	657.0	374.5	305.4	389.1	272.4	147.7	159.0	144.1	330.7
MEAN	6.25	15.0	26.1	21.2	13.4	9.85	13.0	8.79	4.92	5.13	4.65	11.0
MAX	17	54	101	57	31	27	36	35	6.5	16	14	42
MIN	4.3	6.0	8.2	7.6	8.1	6.2	6.8	4.6	3.6	3.4	3.1	4.4
CFSM	.93	2.24	3.90	3.17	2.00	1.47	1.94	1.31	.74	.77	.70	1.64
IN.	1.08	2.49	4.50	3.65	2.08	1.70	2.16	1.51	.82	.88	.80	1.84
AC-FT	384	890	1610	1300	743	606	772	540	293	315	286	656

CAL YR 1977 TOTAL 3639.7 MEAN 9.97 MAX 101 MIN 2.4 CFSM 1.49 IN 20.24 AC-FT 7220
WTR YR 1978 TOTAL 4231.8 MEAN 11.6 MAX 101 MIN 3.1 CFSM 1.73 IN 23.53 AC-FT 8390

12121510 EAST FORK ISSAQUAH CREEK AT MOUTH, AT ISSAQUAH, WA

LOCATION.--Lat 47°32'08", long 122°02'11", in NE¼SE¼ sec.28, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank between road and N.P. Railroad, 1.2 mi (1.9 km) downstream from former site "East Fork Issaquah Creek at Issaquah 12121500", in Issaquah and at mile 0.1 (0.2 km).

DRAINAGE AREA.--9.50 mi² (24.60 km²).

PERIOD OF RECORD.--March 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 76 ft (23.2 m) from topographic map.

REMARKS.--Records good. Many minor diversions for irrigation and domestic use above station. At times dairy products plant discharges water just above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 540 ft³/s (15.3 m³/s) Dec. 3, 1975, gage height, 5.39 ft (1.643 m); minimum, 0.80 ft³/s (0.023 m³/s) July 27, 1975, gage height, 0.87 ft (0.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 352 ft³/s (9.97 m³/s) Dec. 15, gage height, 4.01 ft (1.222 m); minimum, 1.8 ft³/s (0.051 m³/s) July 31, minimum gage height, 1.01 ft (0.308 m) Oct. 12, 19, 20, 21, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	33	41	17	29	21	25	28	11	6.0	4.6	8.6
2	7.1	37	63	17	59	20	25	25	11	6.3	4.3	10
3	6.4	27	53	32	57	19	25	29	10	6.0	4.3	6.9
4	6.4	23	41	58	47	18	44	30	9.6	6.0	4.1	6.3
5	5.6	21	34	62	42	17	49	25	9.6	6.0	4.1	7.6
6	5.6	21	37	55	43	16	40	22	9.3	5.7	3.8	7.9
7	5.6	44	31	52	42	26	34	20	8.9	5.7	3.8	6.0
8	6.0	31	27	72	49	24	29	19	8.9	5.4	3.8	6.0
9	6.0	27	27	61	56	20	25	19	11	5.4	3.6	9.3
10	5.2	26	86	56	46	19	25	19	8.9	6.3	3.6	10
11	4.9	25	136	47	39	20	31	21	8.6	6.0	3.6	7.9
12	5.2	25	118	41	33	22	24	18	9.6	5.4	4.3	6.6
13	7.1	27	124	36	29	25	22	25	11	5.1	3.8	6.0
14	6.4	37	126	34	26	29	22	31	12	4.8	4.1	5.4
15	6.0	34	180	30	26	26	22	34	10	5.1	5.4	6.3
16	6.7	33	192	27	22	24	42	31	8.9	6.9	4.3	6.3
17	6.0	27	104	25	21	24	35	29	8.6	6.6	4.1	7.2
18	6.0	25	70	22	22	24	39	25	7.9	5.7	3.8	6.3
19	5.2	22	57	20	21	22	59	22	7.9	5.4	4.3	5.4
20	4.9	20	48	20	20	20	67	19	7.2	4.8	4.1	5.4
21	5.2	18	40	36	19	19	58	17	7.2	4.6	4.1	6.6
22	5.2	17	34	28	18	19	67	17	7.2	4.6	4.1	30
23	8.2	20	29	25	19	22	66	16	7.2	4.3	4.1	69
24	16	25	27	23	18	29	51	16	6.9	4.3	5.7	34
25	32	86	25	23	23	46	40	14	6.9	4.1	4.8	20
26	34	96	22	30	26	40	34	14	6.9	6.0	4.6	14
27	20	59	21	27	22	33	35	15	6.3	7.2	3.8	11
28	17	45	20	26	23	34	45	14	6.0	5.1	3.8	9.6
29	24	52	22	24	---	29	37	14	6.0	5.1	3.8	8.6
30	29	41	20	22	---	29	32	13	6.3	4.3	3.8	8.6
31	20	---	19	24	---	27	---	12	---	4.1	4.6	---
TOTAL	330.7	1024	1874	1072	897	763	1149	653	256.8	168.3	129.0	352.8
MEAN	10.7	34.1	60.5	34.6	32.0	24.6	38.3	21.1	8.56	5.43	4.16	11.8
MAX	34	96	192	72	59	46	67	34	12	7.2	5.7	69
MIN	4.9	17	19	17	18	16	22	12	6.0	4.1	3.6	5.4
CFSM	1.13	3.59	6.37	3.64	3.37	2.59	4.03	2.22	.90	.57	.44	1.24
IN.	1.29	4.01	7.34	4.20	3.51	2.99	4.50	2.56	1.01	.66	.51	1.38
AC-FT	656	2030	3720	2130	1780	1510	2280	1300	509	334	256	700

CAL YR 1977 TOTAL 7020.4 MEAN 19.2 MAX 192 MIN 2.2 CFSM 2.02 IN 27.49 AC-FT 13920
WTR YR 1978 TOTAL 8669.6 MEAN 23.8 MAX 192 MIN 3.6 CFSM 2.51 IN 33.94 AC-FT 17200

12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'48", in SE¼NW¼ sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft (9 m) downstream from SE 56th Street bridge, 0.7 mi (1.1 km) downstream from North Fork, 1.2 mi (1.9 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Issaquah.

DRAINAGE AREA.--56.6 mi^2 (146.6 km^2) includes 1.9 mi^2 (4.9 km^2) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year. Water quality records 1965-71, 1974, 1976, water temperatures September 1970 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records good. Many minor diversions for irrigation and domestic use above station.

AVERAGE DISCHARGE.--15 years, 142 ft^3/s (4.021 m^3/s) 34.07 in/yr (865 mm/yr), 102,900 acre-ft/yr (127 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft^3/s (81.3 m^3/s) Dec. 3, 1975, gage height, 11.46 ft (3.493 m); minimum, 15 ft^3/s (0.42 m^3/s) Aug. 18, 1977; minimum gage height, 2.34 ft (0.713 m) Sept. 21, 22, 29, 30, Oct. 12, 13, 16, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft^3/s (22.7 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 25	2100	955	27.0	6.85	2.088	Dec. 15	2400	*1,670	47.3	*8.87	2.704
Dec. 10	2300	1,000	28.3	7.01	2.137						

Minimum discharge, 26 ft^3/s (0.74 m^3/s) Aug. 9, minimum gage height, 3.04 ft (0.0927 m) Oct. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	154	264	110	156	130	127	171	69	47	35	70
2	46	219	432	105	283	120	129	156	67	45	35	76
3	43	148	365	154	287	115	125	171	63	44	35	57
4	41	123	271	255	240	116	175	181	60	45	34	52
5	38	113	221	260	217	110	194	158	57	45	32	60
6	38	107	267	228	230	104	165	141	55	44	31	63
7	42	194	238	230	213	144	146	127	54	42	31	52
8	40	153	196	360	234	146	130	115	55	42	30	49
9	43	133	173	297	236	124	117	110	70	42	29	68
10	39	146	412	271	203	119	113	113	64	48	29	78
11	37	137	776	224	181	129	120	125	59	48	30	64
12	37	142	657	200	165	188	107	116	61	44	35	55
13	50	146	716	177	151	177	104	147	72	41	35	49
14	43	207	842	170	142	182	106	163	76	39	33	47
15	39	211	965	154	154	165	107	175	67	40	45	49
16	42	193	1130	137	137	153	224	163	60	58	37	49
17	39	169	647	125	129	141	182	151	56	59	35	59
18	36	159	455	119	134	130	192	136	52	48	34	54
19	37	139	350	111	130	120	274	122	50	44	35	49
20	35	122	281	116	120	115	317	110	49	42	35	47
21	36	108	236	200	115	107	262	99	48	40	34	50
22	35	99	205	161	110	102	315	93	48	38	35	134
23	41	106	179	139	124	113	313	90	47	36	36	482
24	58	157	163	129	119	125	247	86	45	36	45	255
25	168	502	153	130	144	179	201	81	48	35	42	139
26	165	678	139	207	173	168	181	83	47	45	40	96
27	110	412	130	181	144	144	228	90	45	55	35	78
28	86	306	125	166	141	151	278	89	44	41	35	69
29	114	336	134	154	---	141	236	83	44	39	33	59
30	155	264	129	139	---	141	200	77	48	36	33	55
31	114	---	116	139	---	141	---	73	---	35	41	---
TOTAL	1899	6083	11367	5548	4812	4240	5615	3795	1680	1343	1084	2564
MEAN	61.3	203	367	179	172	137	187	122	56.0	43.3	35.0	85.5
MAX	168	678	1130	360	287	188	317	181	76	59	45	482
MIN	35	99	116	105	110	102	104	73	44	35	29	47
CFSM	1.08	3.59	6.48	3.16	3.04	2.42	3.30	2.16	.99	.77	.62	1.51
IN.	1.25	4.00	7.47	3.65	3.16	2.79	3.69	2.49	1.10	.88	.71	1.69
AC-FT	3770	12070	22550	11000	9540	8410	11140	7530	3330	2660	2150	5090

CAL YR 1977 TOTAL 40747 MEAN 112 MAX 1130 MIN 18 CFSM 1.98 IN 26.78 AC-FT 80820
WTR YR 1978 TOTAL 50030 MEAN 137 MAX 1130 MIN 29 CFSM 2.42 IN 32.88 AC-FT 99230

12122000 SAMMAMISH LAKE NEAR REDMOND, WA

LOCATION.--Lat 47°34'47", long 122°06'38", in NE¼SW¼ sec.12, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on west shore 5.6 mi (9.0 km) uplake from outlet and 6.5 mi (10.5 km) south of Redmond.

DRAINAGE AREA.--99.6 mi² (258.0 km²), includes 1.9 mi² (4.9 km²) Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1939 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 24.04 ft (7.327 m) National Geodetic Vertical Datum of 1929. Prior to June 22, 1942, nonrecording gage 4.6 mi (7.4 km) downlake at datum 1.00 ft (0.305 m) higher. June 22, 1942, to Aug. 22, 1951, nonrecording gage 4.5 mi (7.2 km) downlake at datum 1.00 ft (0.305 m) higher and Aug. 23, 1951, to Apr. 29, 1965, at present datum.

REMARKS.--Records good. Minor regulation on tributaries. Many small diversions from tributaries for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.40 ft (2.865 m) Feb. 12, 1951 (present datum); minimum observed, 1.09 ft (0.332 m) Aug. 25-27, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 10.83 ft (3.301 m), present datum, was observed on Dec. 22, 1933, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.67 ft (1.423 m) Dec. 16, 17; minimum, 1.63 ft (0.497 m) Aug. 14.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.03	2.27	3.13	2.91	2.64	2.58	2.53	2.90	2.22	1.84	1.76	1.78
2	2.02	2.34	3.16	2.83	2.74	2.56	2.51	2.86	2.20	1.84	1.75	1.86
3	2.00	2.35	3.20	2.82	2.80	2.53	2.49	2.83	2.18	1.84	1.74	1.87
4	1.99	2.36	3.21	2.88	2.83	2.51	2.50	2.82	2.15	1.82	1.73	1.89
5	1.98	2.36	3.19	2.94	2.83	2.49	2.56	2.79	2.13	1.82	1.72	1.92
6	1.97	2.38	3.20	2.96	2.85	2.47	2.57	2.75	2.09	1.81	1.71	1.93
7	1.97	2.43	3.21	2.98	2.86	2.50	2.56	2.71	2.07	1.80	1.70	1.93
8	1.96	2.47	3.17	3.10	2.90	2.56	2.54	2.67	2.05	1.79	1.70	1.93
9	1.96	2.47	3.12	3.16	2.94	2.55	2.52	2.63	2.03	1.78	1.70	1.97
10	1.96	2.49	3.16	3.20	2.95	2.52	2.50	2.59	2.01	1.78	1.68	2.02
11	1.95	2.50	3.48	3.19	2.93	2.53	2.50	2.56	2.00	1.78	1.67	2.01
12	1.95	2.51	3.70	3.17	2.89	2.57	2.48	2.55	2.00	1.77	1.66	2.01
13	1.97	2.53	3.88	3.13	2.85	2.57	2.46	2.55	2.02	1.77	1.65	2.01
14	1.96	2.57	4.09	3.10	2.82	2.60	2.44	2.59	2.02	1.77	1.64	2.00
15	1.95	2.60	4.27	3.06	2.81	2.60	2.43	2.62	2.01	1.76	1.66	2.00
16	1.96	2.61	4.62	3.01	2.78	2.59	2.51	2.63	2.00	1.78	1.68	2.00
17	1.95	2.61	4.65	2.96	2.74	2.58	2.58	2.62	1.99	1.80	1.68	2.01
18	1.94	2.60	4.57	2.90	2.72	2.56	2.61	2.60	1.98	1.79	1.67	2.00
19	1.94	2.58	4.41	2.82	2.70	2.54	2.69	2.58	1.96	1.79	1.67	1.99
20	1.93	2.54	4.24	2.79	2.66	2.52	2.80	2.55	1.95	1.79	1.67	1.98
21	1.93	2.51	4.08	2.80	2.63	2.49	2.84	2.51	1.94	1.79	1.67	1.99
22	1.92	2.48	3.93	2.80	2.60	2.46	2.90	2.46	1.92	1.78	1.67	2.04
23	1.93	2.47	3.78	2.76	2.58	2.45	2.96	2.42	1.91	1.77	1.67	2.32
24	1.94	2.49	3.64	2.73	2.56	2.47	2.97	2.39	1.90	1.75	1.69	2.45
25	2.01	2.59	3.52	2.70	2.57	2.52	2.96	2.35	1.89	1.74	1.71	2.47
26	2.08	2.87	3.40	2.72	2.61	2.57	2.94	2.32	1.88	1.76	1.72	2.46
27	2.10	2.99	3.29	2.72	2.61	2.56	2.94	2.30	1.87	1.80	1.72	2.44
28	2.11	3.05	3.19	2.70	2.60	2.57	2.97	2.30	1.86	1.80	1.71	2.43
29	2.16	3.10	3.13	2.68	---	2.56	2.96	2.30	1.86	1.79	1.71	2.40
30	2.21	3.11	3.06	2.65	---	2.56	2.94	2.27	1.84	1.78	1.72	2.37
31	2.22	---	2.98	2.64	---	2.55	---	2.25	---	1.77	1.73	---
MEAN	2.00	2.57	3.60	2.90	2.75	2.54	2.67	2.56	2.00	1.79	1.70	2.08
MAX	2.22	3.11	4.65	3.20	2.95	2.60	2.97	2.90	2.22	1.84	1.76	2.47
MIN	1.92	2.27	2.98	2.64	2.56	2.45	2.43	2.25	1.84	1.74	1.64	1.78

WTR YR 1978 MEAN 2.43 MAX 4.65 MIN 1.64

12122010 SAMMAMISH RIVER ABOVE BEAR CREEK NEAR REDMOND, WA

LOCATION.--Lat 47°39'28", long 122°06'53", in NE¼NW¼ sec.13, T.25 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 2,500 ft (760 m) upstream from bridge leading to county park, 3,000 ft (910 m) downstream from outlet of Sammamish Lake, 1.5 mi (2.4 km) south of Redmond and at mile 14.6 (23.5 km).

DRAINAGE AREA.--102 mi² (264 km²) includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--October 1975 to September 1978 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 23.11 ft (7.044 m) National Geodetic Vertical Datum of 1929 (levels by King County).

REMARKS.--Records good. Natural regulation from Sammamish Lake and some minor regulation on upstream tributaries. Many small diversions for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft³/s (36.2 m³/s) Dec. 5, 1975, gage height, 5.79 ft (1.765 m); minimum discharge, 15 ft³/s (0.42 m³/s) Aug. 21, 1977, gage height, 2.37 ft (0.722 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 915 ft³/s (25.9 m³/s) Dec. 17, gage height, 5.21 ft (1.588 m); minimum daily discharge, 40 ft³/s (1.13 m³/s) Aug. 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	127	353	323	264	227	222	331	142	69	57	60
2	78	137	367	304	293	220	219	319	137	69	55	71
3	76	140	378	303	311	217	218	310	132	67	52	73
4	74	140	378	320	318	211	222	306	127	65	50	76
5	73	140	371	343	325	208	232	296	122	64	49	80
6	73	145	381	351	329	202	231	284	116	62	47	84
7	73	160	381	352	331	212	228	273	109	62	47	82
8	73	165	371	388	352	224	225	261	105	60	47	80
9	71	167	357	406	346	226	220	252	109	58	46	90
10	69	172	378	420	342	219	215	247	100	60	44	98
11	69	175	472	416	333	218	218	242	98	57	43	96
12	69	177	544	409	323	227	211	230	98	55	43	94
13	71	187	607	399	309	231	206	233	102	55	41	92
14	71	195	679	388	298	234	201	243	100	55	40	90
15	71	201	751	381	296	235	197	252	100	54	40	90
16	71	204	890	368	285	234	222	251	98	58	44	90
17	69	204	900	350	274	230	234	248	94	60	44	90
18	67	201	860	334	269	226	241	241	92	60	44	88
19	67	198	800	315	263	222	267	234	90	62	43	86
20	65	192	733	300	255	216	296	226	88	60	43	84
21	65	180	670	309	240	210	304	216	88	60	43	88
22	65	175	625	307	231	204	324	206	84	58	43	100
23	69	177	572	295	225	203	344	195	80	57	41	150
24	71	180	536	283	221	208	346	187	78	55	47	172
25	82	213	496	277	224	219	342	180	76	54	50	177
26	92	282	460	283	233	228	334	171	73	55	50	177
27	94	315	428	282	232	228	347	169	71	65	49	175
28	96	329	403	278	231	228	351	163	71	62	49	170
29	105	339	388	272	---	227	350	161	71	60	49	162
30	120	343	367	265	---	226	342	153	71	58	50	160
31	116	---	347	261	---	225	---	148	---	57	54	---
TOTAL	2407	5960	16243	10282	7953	6845	7909	7228	2922	1853	1444	3225
MEAN	77.6	199	524	332	284	221	264	233	97.4	59.8	46.6	108
MAX	120	343	900	420	352	235	351	331	142	69	57	177
MIN	65	127	347	261	221	202	197	148	71	54	40	60
CFSM	.76	1.95	5.14	3.26	2.78	2.17	2.59	2.28	.96	.59	.46	1.06
IN.	.88	2.17	5.92	3.75	2.90	2.50	2.88	2.64	1.07	.68	.53	1.18
AC-FT	4770	11820	32220	20390	15770	13580	15690	14340	5800	3680	2860	6400

CAL YR 1977 TOTAL 60024 MEAN 164 MAX 900 MIN 18 CFSM 1.61 IN 21.89 AC-FT 119100
WTR YR 1978 TOTAL 74271 MEAN 203 MAX 900 MIN 40 CFSM 1.99 IN 27.09 AC-FT 147300

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW¼SW¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi (6.3 km) upstream from Bear Creek, 3.6 mi (5.8 km) southeast of Woodinville, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--159 mi² (412 km²) includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1965 to current year, water temperatures August 1965 to February 1967.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi (3.2 km) downstream from base gage at same datum.

REMARKS.--Records fair. Natural regulation from Sammamish Lake and some minor regulation. Many small diversions for irrigation and domestic use.

AVERAGE DISCHARGE.--13 years, 333 ft³/s (9.431 m³/s), 28.44 in/yr (722 mm/yr), 241,300 acre-ft/yr (298 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s (67.7 m³/s) Mar. 6, 1972, elevation, 25.83 ft (7.873 m); minimum daily, 25 ft³/s (0.71 m³/s) Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,580 ft³/s (44.7 m³/s) Dec. 16, elevation, 22.74 ft (6.931 m); minimum daily, 56 ft³/s (1.59 m³/s) Aug. 7, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	232	480	465	436	365	317	426	212	130	80	101
2	138	277	494	439	544	343	301	406	203	132	82	149
3	129	272	490	491	546	332	291	410	194	134	79	119
4	119	266	486	633	516	322	305	426	190	131	82	127
5	113	266	470	690	499	310	339	400	187	127	72	132
6	112	288	518	680	515	301	325	374	177	123	63	132
7	114	334	512	635	508	357	308	354	173	119	56	122
8	111	320	478	796	537	414	294	336	166	118	57	114
9	109	313	454	779	542	378	279	330	173	114	57	145
10	107	323	526	758	524	354	269	332	160	118	56	170
11	106	317	803	715	496	350	281	330	160	117	59	149
12	105	317	869	668	474	370	266	313	164	113	63	138
13	119	327	946	631	450	367	263	332	184	111	58	134
14	112	357	1080	623	430	378	258	394	177	103	58	131
15	105	350	1230	599	464	361	252	414	185	99	67	132
16	113	339	1550	571	426	348	367	388	175	114	105	139
17	112	327	1450	540	402	336	367	370	168	118	88	145
18	108	318	1340	511	400	323	352	352	166	108	72	140
19	102	313	1210	484	398	308	422	336	161	106	77	132
20	106	301	1090	458	372	296	490	322	140	102	77	126
21	94	282	968	513	354	286	462	305	143	97	75	125
22	101	269	878	499	341	276	500	298	147	100	72	180
23	114	274	803	458	345	274	514	289	145	96	71	416
24	127	299	741	433	339	281	484	274	143	91	90	406
25	174	369	688	424	357	354	462	264	143	88	93	361
26	191	506	641	516	402	400	448	255	139	96	82	334
27	173	472	599	484	380	354	480	252	136	114	77	315
28	166	452	565	454	376	352	472	252	134	102	74	303
29	202	482	562	431	---	343	466	247	135	94	70	286
30	255	458	538	410	---	336	446	234	134	81	66	272
31	223	---	500	404	---	336	---	223	---	79	67	---
TOTAL	4112	10020	23959	17192	12373	10505	11080	10238	4914	3375	2245	5675
MEAN	133	334	773	555	442	339	369	330	164	109	72.4	189
MAX	255	506	1550	796	546	414	514	426	212	134	105	416
MIN	94	232	454	404	339	274	252	223	134	79	56	101
CFSM	.84	2.10	4.86	3.49	2.78	2.13	2.32	2.08	1.03	.69	.46	1.19
IN.	.96	2.34	5.61	4.02	2.89	2.46	2.59	2.40	1.15	.79	.53	1.33
AC-FT	8160	19870	47520	34100	24540	20840	21980	20310	9750	6690	4450	11260

CAL YR 1977 TOTAL 93397 MEAN 256 MAX 1550 MIN 25 CFSM 1.61 IN 21.85 AC-FT 185300
WTR YR 1978 TOTAL 115688 MEAN 317 MAX 1550 MIN 56 CFSM 1.99 IN 27.07 AC-FT 229500

12126500 SAMMAMISH RIVER AT BOTHELL, WA

LOCATION.--Lat 47°45'32", long 122°12'09", in NW¼NW¼ sec.8, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, at 102nd Street bridge at Bothell, 1.0 mi (1.6 km) downstream from North Creek, 7.3 mi (11.7 km) downstream from gaging station (12125200), and at mile 3.5 (5.6 km).

DRAINAGE AREA.--212 mi² (549 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair.

COOPERATION.--Temperature, dissolved oxygen, pH turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
05...	0940	117	141	7.0	11.5	60	4
NOV							
30...	0915	464	120	7.1	7.8	65	11
DEC							
21...	1030	996	119	7.1	6.5	60	5
JAN , 1978							
18...	1025	520	120	7.2	6.7	40	3
FEB							
23...	1010	332	129	7.3	8.6	45	3
MAR							
08...	1050	430	110	7.2	8.4	90	11
APR							
05...	1030	330	120	7.3	9.6	60	5
MAY							
03...	1030	398	118	7.2	12.1	65	4
JUN							
21...	1010	140	140	7.1	18.8	55	4
JUL							
19...	1000	108	135	7.1	17.9	55	5
AUG							
09...	1030	57	128	7.3	21.6	10	9
SEP							
20...	1115	130	131	7.3	14.4	35	4

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
05...	10.8	.27	.18	.06	.02	.06
NOV						
30...	10.7	.63	.15	.07	.01	.03
DEC						
21...	10.9	.81	.09	.05	.01	.03
JAN , 1978						
18...	10.8	.82	.14	.05	.02	.06
FEB						
23...	10.9	.64	.12	.04	.01	.03
MAR						
08...	10.7	.73	.20	.10	.03	.09
APR						
05...	10.5	.52	.16	.07	.01	.03
MAY						
03...	10.3	.47	.10	.06	.01	.03
JUN						
21...	10.0	.22	.10	.06	.03	.09
JUL						
19...	9.1	.31	.31	.07	.02	.06
AUG						
09...	9.3	.20	.14	.09	.02	.06
SEP						
20...	10.0	.24	.11	.07	.03	.09

12127100 SWAMP CREEK AT KENMORE, WA

LOCATION.--Lat 47°45'22", long 122°13'57", in NE¼ sec.12, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on right bank on upstream side of Bothell Way bridge (State Highway 522) at Kenmore and at mile 0.5 (0.8 km).

DRAINAGE AREA.--23.1 mi² (59.8 km²).

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 14.46 ft (4.407 m) National Geodetic Vertical Datum of 1929 (Washington State Highway Department). Apr. 27, 1967 to Sept. 7, 1967, nonrecording gage at same site and datum.

REMARKS.--Records good. Some minor diversions for domestic use upstream from station. No regulation.

AVERAGE DISCHARGE.--13 years (water years 1964-72, 1975-78), 34.1 ft³/s (0.966 m³/s), 20.05 in/yr (509 mm/yr), 24,710 acre-ft/yr (30.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 487 ft³/s (13.8 m³/s) Mar. 5, 1972, gage height, 6.03 ft (1.838 m); minimum, 2.3 ft³/s (0.065 m³/s) Aug. 12, 1977; minimum gage height, 1.71 ft (0.521 m) July 31, Aug. 1, 2, 1965, Aug. 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 11	1730	251	7.11	4.24	1.292	Jan. 4	unknown	unknown	----	unknown	---
Dec. 16	0115	*283	8.01	*4.43	1.350						

Minimum discharge, 4.6 ft³/s (0.130 m³/s) Aug. 9, 10, gage height, 1.85 ft (0.564 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	42	52	28	69	35	28	24	10	6.2	6.2	24
2	12	51	52	26	113	31	25	23	9.6	11	6.2	39
3	11	45	43	100	100	29	23	45	9.1	12	5.7	18
4	10	30	42	160	74	28	27	42	8.5	9.6	5.3	26
5	10	37	36	105	63	28	32	28	8.0	8.8	5.2	26
6	11	44	58	90	66	26	26	23	7.5	16	5.0	19
7	14	46	50	110	63	77	22	20	7.3	27	5.0	14
8	11	32	38	140	64	66	20	18	7.5	19	5.0	12
9	11	31	34	110	56	58	19	20	10	20	5.0	38
10	10	41	77	90	46	43	18	21	9.9	29	5.3	42
11	9.9	32	213	75	41	56	19	21	9.9	28	5.9	19
12	9.9	30	179	65	37	56	18	17	9.6	23	6.6	14
13	13	45	155	68	33	46	27	30	15	17	5.9	13
14	12	69	165	76	35	41	23	62	15	6.8	5.7	12
15	12	48	172	66	73	35	26	43	18	6.6	8.8	16
16	12	34	221	58	45	31	94	31	14	23	9.3	15
17	11	28	133	50	39	29	63	26	10	17	8.0	19
18	12	28	100	40	45	27	46	22	8.8	11	6.6	13
19	12	24	75	37	46	25	69	19	8.0	9.1	19	11
20	12	22	60	34	39	24	65	17	7.7	7.7	11	11
21	12	19	52	69	35	23	44	15	7.5	6.8	8.5	16
22	12	18	45	54	31	22	57	16	8.5	6.2	8.8	42
23	18	23	39	42	34	27	57	17	9.3	5.7	8.8	86
24	23	37	35	37	32	29	40	15	9.1	5.5	18	37
25	36	65	31	42	45	77	33	13	9.6	5.7	14	24
26	31	81	29	69	55	70	30	15	7.7	13	11	19
27	20	53	25	53	39	45	53	16	6.8	18	8.0	16
28	19	46	35	46	38	43	39	17	6.4	9.9	7.5	15
29	46	57	48	42	---	38	31	14	6.4	7.7	7.0	15
30	66	40	37	37	---	33	28	12	6.6	6.4	6.6	13
31	31	---	31	40	---	31	---	11	---	5.9	7.0	---
TOTAL	542.8	1198	2362	2059	1456	1229	1102	713	281.3	398.6	245.9	684
MEAN	17.5	39.9	76.2	66.4	52.0	39.6	36.7	23.0	9.38	12.9	7.93	22.8
MAX	66	81	221	160	113	77	94	62	18	29	19	86
MIN	9.9	18	25	26	31	22	18	11	6.4	5.5	5.0	11
CFSM	.76	1.73	3.30	2.87	2.25	1.71	1.59	1.00	.41	.56	.34	.99
IN.	.87	1.93	3.80	3.32	2.34	1.98	1.77	1.15	.45	.64	.40	1.10
AC-FT	1080	2380	4690	4080	2890	2440	2190	1410	558	791	488	1360

CAL YR 1977 TOTAL 10140.2 MEAN 27.8 MAX 221 MIN 2.8 CFSM 1.20 IN 16.33 AC-FT 20110
WTR YR 1978 TOTAL 12271.6 MEAN 33.6 MAX 221 MIN 5.0 CFSM 1.46 IN 19.76 AC-FT 24340

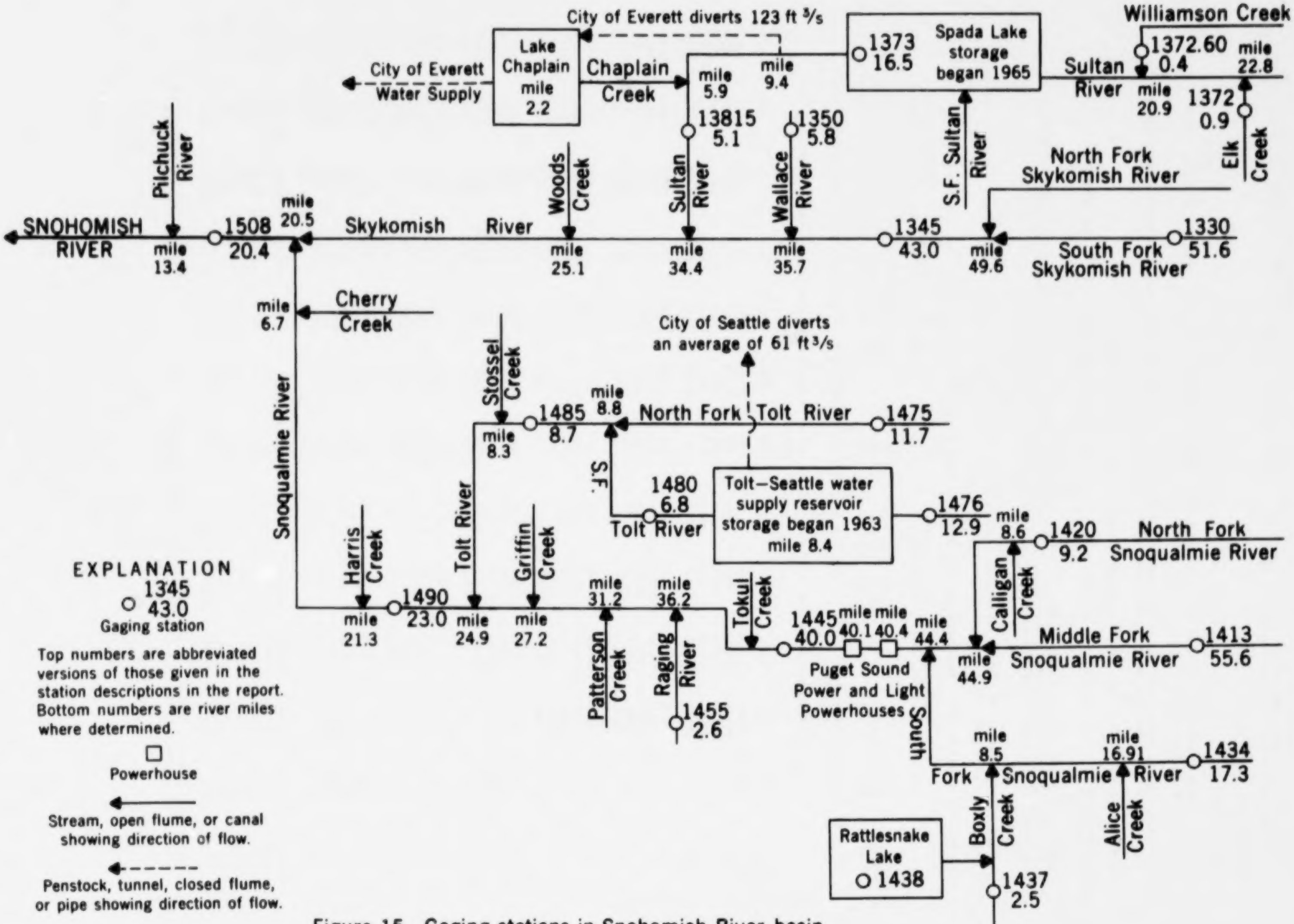

City of Everett diverts 123 ft³/s
Lake Chaplain mile 2.2
City of Everett Water Supply
Chaplain Creek
mile 5.9
mile 9.4
1373 16.5
Spada Lake storage began 1965
Williamson Creek
1372.60 0.4
mile 22.8
Sultan River
mile 20.9
1372 0.9
Elk Creek
S.F. Sultan River
North Fork Skykomish River
Pilchuck River
Woods Creek
Sultan River
13815 5.1
Wallace River
1350 5.8
SNOHOMISH RIVER
mile 13.4
1508 20.4
mile 20.5
Skykomish River
mile 25.1
mile 34.4
mile 35.7
1345 43.0
mile 49.6
South Fork Skykomish River
1330 51.6
mile 6.7
Cherry Creek
Snoqualmie River
City of Seattle diverts an average of 61 ft³/s
Stossel Creek
mile 8.3
1485 8.7
mile 8.8
North Fork Tolt River
1475 11.7
S.F.
1480 6.8
Tolt River
Tolt–Seattle water supply reservoir storage began 1963 mile 8.4
1476 12.9
mile 8.6
1420 9.2
North Fork Snoqualmie River
Calligan Creek
Tolt River
Harris Creek
Griffin Creek
mile 21.3
1490 23.0
mile 24.9
mile 27.2
mile 31.2
mile 36.2
Patterson Creek
Raging River
1455 2.6
Tokul Creek
1445 40.0
mile 40.1
mile 40.4
mile 44.4
mile 44.9
Middle Fork Snoqualmie River
1413 55.6
Puget Sound Power and Light Powerhouses
South Fork Snoqualmie River
mile 8.5
mile 16.91
1434 17.3
Boxly Creek
Alice Creek
Rattlesnake Lake 1438
1437 2.5
EXPLANATION
1345 43.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 15. Gaging stations in Snohomish River basin.

12133000 SOUTH FORK SKYKOMISH RIVER NEAR INDEX, WA

LOCATION.--Lat 47°48'20", long 121°32'44", in NE¼ sec.29, T.27 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on right bank 600 ft (183 m) upstream from Sunset Falls, 1.1 mi (1.8 km) southeast of Index, 2.0 mi (3.2 km) upstream from confluence with North Fork, and at mile 51.6 (83.0 km).

DRAINAGE AREA.--355 mi² (919 km²).

PERIOD OF RECORD.--October 1902 to September 1905, April 1911 to current year.

REVISED RECORDS.--WSP 512: 1903-5, 1911-14. WSP 572: Drainage area. WSP 792: 1934. WSP 1286: 1903-5(M), 1912(M), 1914-29(M), 1931-34(M).

GAGE.--Water-stage recorder. Datum of gage is 574.80 ft (175.199 m) National Geodetic Vertical Datum of 1929. See WSP 1932 for history of changes prior to Mar. 15, 1934.

REMARKS.--Records good. Small diversions for domestic use. No regulation.

AVERAGE DISCHARGE.--70 years, 2,446 ft³/s (69.27 m³/s) 93.57 in/yr (2,377 mm/yr) 1,772,000 acre-ft/yr (2,180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,000 ft³/s (1,560 m³/s) Dec. 12, 1921, gage height, 22.8 ft (6.95 m), from high-water marks, site then in use, from rating curve extended above 22,500 ft³/s (637 m³/s) on basis of slope-area measurement at gage height 22.12 ft (6.742 m); minimum, 165 ft³/s (4.67 m³/s) Nov. 29, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 5 ft (1.5 m) higher than that of Dec. 12, 1921, discharge, about, 70,000 ft³/s (1,980 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	27,300	773	17.06	5.200	Dec. 2	1000	*39,500	1,120	*19.86	6.053
Nov. 26	0100	26,100	739	16.72	5.096	Dec. 11	0400	16,600	470	13.64	4.157
Nov. 29	0900	16,900	479	13.75	4.191	Dec. 14	0400	16,300	462	13.53	4.124

Minimum discharge, 495 ft³/s (14.0 m³/s) Oct. 22, 23, gage height, 2.27 ft (0.692 m), minimum gage height, 1.75 ft (0.533 m) Aug. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	908	12000	9220	905	841	1050	2970	2620	3290	2520	749	1620
2	806	11000	31200	881	949	971	2560	2540	4200	2580	737	2020
3	728	4820	16400	920	1790	901	2290	2590	5210	2260	741	1360
4	668	3180	8770	2020	1910	870	2160	2340	6040	2050	745	1150
5	620	2490	5720	2420	1820	840	2100	2080	6470	1900	733	1080
6	592	2330	5310	2160	2470	808	1930	1930	5830	1850	697	1280
7	776	4060	5100	1720	2250	974	1760	1970	4750	2010	669	1180
8	800	2670	3700	2440	2240	1510	1640	2270	4120	2040	657	1090
9	1020	2910	2960	2430	1960	1310	1530	2740	4490	1680	657	1100
10	848	5670	6160	2090	1670	1200	1540	2920	3880	1660	645	1700
11	740	4510	14400	1850	1430	1110	1980	3820	3220	1490	653	1700
12	680	3810	10600	1640	1250	1050	1790	2750	3110	1340	685	1420
13	794	3350	10300	1490	1110	1070	1640	2900	3260	1350	681	1190
14	746	6150	13800	1380	1030	1060	1510	3970	3030	1370	637	1050
15	680	5500	9340	1350	989	993	1440	4010	2870	1310	1300	1140
16	650	4780	6790	1310	908	975	1550	3590	2580	1400	1600	1170
17	609	3550	4850	1220	857	1010	1540	3320	2420	1400	1200	1220
18	570	2720	3770	1140	839	1150	1530	3860	2900	1230	922	1210
19	543	2210	3050	1080	899	1290	1580	3560	3000	1150	1070	1070
20	526	1860	2530	1060	995	1350	1830	4580	3000	1110	936	975
21	510	1600	2230	1220	1070	1440	1790	5260	3100	1090	796	1010
22	505	1490	2000	1490	1200	1910	1800	4240	2920	1080	749	2760
23	614	1430	1800	1300	1550	2740	1810	3270	2680	1080	709	6890
24	770	1400	1630	1150	1770	3660	1740	2720	2480	1050	741	4000
25	2320	8740	1500	1090	1490	4910	1840	2380	2280	975	864	2680
26	2050	17700	1370	1120	1330	5200	2420	2240	2130	960	814	2090
27	1560	8130	1240	1050	1200	4300	4450	2570	2340	1070	725	1800
28	1280	8320	1160	994	1160	4210	4200	3670	2740	936	673	1560
29	1290	12800	1140	955	---	4040	3410	3150	3100	868	645	1380
30	2240	7050	1090	902	---	3920	2950	2650	2790	814	633	1280
31	2190	---	1000	868	---	3580	---	2660	---	778	757	---
TOTAL	29633	158230	190130	43645	38977	61402	63280	93570	104280	44601	24820	51175
MEAN	956	5274	6133	1408	1392	1981	2109	3018	3476	1439	801	1706
MAX	2320	17700	31200	2440	2470	5200	4450	5260	6470	2580	1600	6890
MIN	505	1400	1000	868	839	808	1440	1930	2130	778	633	975
CFSM	2.69	14.9	17.3	3.97	3.92	5.58	5.94	8.50	9.79	4.05	2.26	4.81
IN.	3.11	16.58	19.92	4.57	4.08	6.43	6.63	9.81	10.93	4.67	2.60	5.36
AC-FT	58780	313800	377100	86570	77310	121800	125500	185600	206800	88470	49230	101500

CAL YR 1977 TOTAL 847840 MEAN 2323 MAX 31200 MIN 405 CFSM 6.54 IN 88.84 AC-FT 1682000
WTR YR 1978 TOTAL 903743 MEAN 2476 MAX 31200 MIN 505 CFSM 6.98 IN 94.70 AC-FT 1793000

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW¼SW¼ sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi (3.2 km) southeast of Gold Bar, 7.3 mi (11.7 km) upstream from Wallace River, and at mile 43.0 (69.2 km).

DRAINAGE AREA.--535 mi² (1,386 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 209.26 ft (63.782 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. No regulation. Some small diversions above station.

AVERAGE DISCHARGE.--50 years, 3,992 ft³/s (113.1 m³/s) 101.33 in/yr (2,574 mm/yr), 2,892,000 acre-ft/yr (3,570 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,700 ft³/s (2,510 m³/s) Dec. 21, 1933, gage height, 21.3 ft (6.49 m), from rating curve extended above 32,000 ft³/s (906 m³/s); minimum, 315 ft³/s (8.92 m³/s) Nov. 29, 1952; minimum gage height, 2.73 ft (0.832 m) Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 19,000 ft³/s (538 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	42,800	1,210	15.52	4.730
Nov. 26	0200	41,700	1,180	15.34	4.676
Nov. 29	0800	27,000	765	12.73	3.880

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 2	1000	*62,800	1,780	*18.22	5.553
Dec. 11	0300	28,000	793	12.93	3.941
Dec. 14	0200	25,200	714	12.38	3.773

Minimum discharge, 906 ft³/s (25.7 m³/s) Oct. 23, gage height, 3.91 ft (1.192 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1590	17600	15500	1600	1530	1870	4870	4180	5520	4100	1200	2860
2	1430	18300	50400	1530	1760	1720	4180	4090	7160	4710	1180	3910
3	1310	7620	26200	1650	3170	1590	3690	4220	8770	3900	1170	2440
4	1210	5130	14100	3550	3370	1540	3440	3750	10200	3420	1180	2040
5	1130	3970	9190	4380	3200	1480	3360	3290	10800	3130	1140	1900
6	1880	3620	8770	3880	4320	1430	3050	3040	9670	2990	1060	2160
7	1480	6390	8500	3050	3970	1820	2770	3130	7870	3270	1010	2020
8	1540	4360	6290	4640	3990	2880	2570	3670	6750	3370	990	1810
9	1920	4360	5060	4540	3440	2450	2410	4460	7470	3080	980	1840
10	1640	8700	10700	3840	2920	2240	2470	4730	6440	2690	960	2910
11	1430	7300	24200	3340	2530	2070	3170	4940	5390	2450	960	2960
12	1320	6250	17600	2940	2230	1940	2810	4520	5190	2200	1090	2480
13	1640	5470	16800	2660	2010	1950	2590	5170	5450	2210	1060	2060
14	1440	9100	21800	2480	1840	1940	2400	7110	5000	2220	951	1800
15	1290	8350	15400	2410	1780	1820	2270	6960	4730	2200	2230	1920
16	1240	7370	10800	2350	1620	1770	2450	6160	4200	2330	2690	1970
17	1170	5720	7820	2200	1530	1830	2440	5630	3900	2340	1970	2040
18	1110	4340	6200	2040	1480	2070	2440	5150	4790	2040	1470	2020
19	1050	3480	5040	1940	1580	2280	2540	6130	4940	1920	1840	1780
20	1010	2890	4220	1890	1760	2400	2940	7820	4960	1860	1570	1600
21	960	2470	3730	2200	1900	2510	2860	8720	5110	1820	1310	1710
22	933	2270	3340	2630	2110	3200	2880	7010	4830	1820	1210	4920
23	1130	2150	3000	2330	2750	4660	2860	5280	4360	1810	1110	13200
24	1420	2080	2750	2080	3100	6290	2750	4400	4010	1750	1130	7370
25	3800	14700	2560	1980	2630	8450	2960	3780	3660	1620	1430	4710
26	3360	27400	2350	2040	2350	9010	4010	3600	3410	1590	1380	3530
27	2570	12500	2150	1920	2110	7450	7280	4360	3820	1870	1190	2990
28	2100	13300	2020	1820	2070	7470	6870	6360	4620	1550	1070	2540
29	2110	20600	2020	1750	---	6960	5450	5250	5230	1420	1010	2280
30	3910	10900	1930	1630	---	6630	4730	4360	4580	1320	970	2080
31	3970	---	1760	1570	---	6020	---	4420	---	1260	1230	---
TOTAL	53293	248690	312200	78860	69050	107740	101510	155690	172830	74320	39741	89850
MEAN	1719	8290	10070	2544	2466	3475	3384	5022	5761	2397	1282	2995
MAX	3970	27400	50400	4640	4320	9010	7280	8720	10800	4710	2690	13200
MIN	933	2080	1760	1530	1480	1430	2270	3040	3410	1260	951	1600
CFSM	3.21	15.5	18.8	4.76	4.61	6.50	6.33	9.39	10.8	4.48	2.40	5.60
IN.	3.71	17.29	21.71	5.48	4.80	7.49	7.06	10.83	12.02	5.17	2.76	6.25
AC-FT	105700	493300	619200	156400	137000	213700	201300	308800	342800	147400	78830	178200

CAL YR 1977 TOTAL 1387741 MEAN 3802 MAX 50400 MIN 664 CFSM 7.11 IN 96.49 AC-FT 2753000
WTR YR 1978 TOTAL 1503774 MEAN 4120 MAX 50400 MIN 933 CFSM 7.70 IN 104.56 AC-FT 2983000

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, October 1977 to September 1978.

REMARKS.--Samples taken at site 0.7 mi (1.1 km) upstream from gaging station.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
03...	1350	1300	55	6.1	9.5	5	1
NOV							
28...	1355	13200	29	6.9	5.8	40	11
DEC							
19...	1420	4900	40	6.8	4.7	15	6
JAN , 1978							
16...	1435	2330	42	6.7	6.1	5	2
FEB							
21...	1345	1930	53	7.1	6.2	15	1
MAR							
06...	1345	1440	48	6.6	5.2	5	1
APR							
03...	1400	3600	35	7.4	7.0	15	2
MAY							
01...	1330	4120	34	7.4	7.7	5	1
JUN							
19...	1305	4850	25	7.2	10.6	15	3
JUL							
17...	1340	2310	35	6.5	11.0	5	1
AUG							
07...	1355	1020	43	7.7	17.9	0	2
SEP							
18...	1630	1950	35	7.3	10.6	15	3

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
03...	10.6	.29	.05	.01	.00	.00
NOV						
28...	13.5	.18	.04	.02	.00	.00
DEC						
19...	13.2	.14	.09	.02	.01	.03
JAN , 1978						
16...	12.2	.19	.03	.01	.00	.00
FEB						
21...	12.2	.22	.06	.01	.00	.00
MAR						
06...	12.7	.13	.03	.01	.00	.00
APR						
03...	11.9	.08	.05	.01	.00	.00
MAY						
01...	11.7	.05	.04	.01	.00	.00
JUN						
19...	10.9	.03	.03	.03	.00	.00
JUL						
17...	11.5	.08	.01	.00	.00	.00
AUG						
07...	10.3	.05	.04	.01	.00	.00
SEP						
18...	10.9	.21	.06	.02	.00	.00

12135000 WALLACE RIVER AT GOLD BAR, WA

LOCATION.--Lat 47°51'50", long 121°41'47", in NW¼NE¼ sec.6, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 30 ft (9 m) downstream from highway bridge, 0.5 mi (0.8 km) north of Gold Bar, 1.3 mi (2.1 km) upstream from Olney Creek, and at mile 5.8 (9.3 km).

DRAINAGE AREA.--19.0 mi^2 (49.2 km^2).

PERIOD OF RECORD.--October 1928 to September 1933, July 1946 to November 1976, August 1977 to June 1978 (discontinued). Monthly discharge only for some periods, published in WSP 1316. Water temperatures July 1955 to September 1972.

REVISED RECORDS.--WSP 1316: 1930(M), 1932-33(M). WSP 1932: Drainage area. WRD Wash. 1974: 1971-73(P).

GAGE.--Water-stage recorder. Datum of gage is 174.08 ft (53.060 m) National Geodetic Vertical Datum of 1929. December 1928 to Sept. 30, 1933, nonrecording gage 50 ft (15 m) upstream at different datum. July 25, 1946, to Sept. 19, 1958, water-stage recorder on left bank at present site and datum.

REMARKS.--Records good. Flow affected by some natural storage in Wallace Lake. No diversion above station.

AVERAGE DISCHARGE.--35 years (water years 1929-33, 1947-76), 165 ft^3/s (4.673 m^3/s), 117.93 in/yr (2,995 mm/yr) 119,500 acre-ft/yr (147 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft^3/s (96.3 m^3/s) Jan. 5, 1969, gage height, 8.37 ft (2.551 m); minimum, 5.8 ft^3/s (0.16 m^3/s) Aug. 25, 29, 30, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1977 to June 1978: Peak discharges above base of 1,420 ft^3/s (40.2 m^3/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft^3/s)	(m^3/s)	(ft)	(m)			(ft^3/s)	(m^3/s)	(ft)	(m)
Nov. 1	1700	1,550	43.9	7.64	2.329	Dec. 2	0700	*2,250	63.7	*8.60	2.621
Nov. 25	1700	1,770	50.1	7.96	2.426	Dec. 10	2100	1,770	50.1	7.96	2.426
Nov. 29	0500	1,420	40.2	7.42	2.262						

Minimum discharge during period Oct. 1 to June 30, 48 ft^3/s (1.36 m^3/s) Oct. 22, 23, gage height, 3.54 ft (1.079 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	703	1080	68	80	75	154	132	134			
2	82	252	1880	65	122	69	146	132	146			
3	71	128	840	108	247	64	140	146	154			
4	65	99	421	491	172	61	146	123	154			
5	58	89	279	300	195	59	144	108	144			
6	54	130	503	197	267	59	123	101	120			
7	130	240	340	146	193	130	113	106	96			
8	145	101	223	318	190	186	106	120	81			
9	143	217	179	239	146	118	98	134	118			
10	93	333	880	188	120	98	106	136	92			
11	74	190	1010	152	105	89	127	213	110			
12	69	195	563	138	92	83	100	160	92			
13	190	165	608	127	83	84	90	209	132			
14	91	242	567	118	78	83	83	273	115			
15	74	190	414	118	77	75	78	300	170			
16	74	167	303	103	69	78	92	267	142			
17	66	135	223	92	65	93	100	221	112			
18	59	108	186	84	74	115	117	179	108			
19	56	91	158	77	105	125	127	193	93			
20	53	80	138	78	112	117	158	204	89			
21	51	71	123	134	122	118	138	186	84			
22	49	67	112	125	123	144	140	146	75			
23	66	65	101	92	195	221	136	122	67			
24	82	71	93	81	152	291	134	101	61			
25	141	795	90	87	112	400	162	90	60			
26	131	731	83	106	98	368	190	100	59			
27	79	527	75	93	86	249	312	231	58			
28	63	751	71	89	83	321	221	216	63			
29	93	723	95	92	---	221	172	152	75			
30	255	303	98	83	---	228	148	118	68			
31	133	---	80	78	---	200	---	115	---			
TOTAL	2893	7959	11816	4267	3563	4622	4101	5034	3072			
MEAN	93.3	265	381	138	127	149	137	162	102			
MAX	255	795	1880	491	267	400	312	300	170			
MIN	49	65	71	65	65	59	78	90	58			
CFSM	4.91	13.9	20.1	7.26	6.68	7.84	7.21	8.53	5.37			
IN.	5.66	15.58	23.13	8.35	6.98	9.05	8.03	9.86	6.01			
AC-FT	5740	15790	23440	8460	7070	9170	8130	9980	6090			

12137200 ELK CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°58'14", long 121°33'12", in NW¼SW¼ sec.29, T.29 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 250 ft (76 m) downstream from Boulder Creek, about 0.9 mi (1.4 km) above mouth, and 14.2 mi (22.8 km) northeast of Sultan.

DRAINAGE AREA.--11.4 mi² (29.5 km²).

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage 1,600 ft (488 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,040 ft³/s (57.8 m³/s) Dec. 2, 1977, gage height, 7.20 ft (2.195 m); minimum, 8.7 ft³/s (0.246 m³/s) Aug. 18, 19, 20, 21, 22, 23, 1977, gage height, 0.97 ft (0.296 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,040 ft³/s (57.8 m³/s) Dec. 2, gage height, 7.20 ft (2.195 m); minimum, 11 ft³/s (0.312 m³/s) Aug. 7-11; minimum gage height, 1.09 ft (0.332 m) Aug. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	1010	606	31	33	39	104	93	141	64	16	357
2	43	446	1360	29	56	35	93	100	169	132	15	238
3	37	161	392	59	167	31	84	106	192	85	15	106
4	33	105	177	340	134	30	84	84	207	76	14	81
5	30	90	120	248	164	30	82	68	192	65	13	87
6	29	175	240	147	226	30	71	62	151	58	12	94
7	88	242	184	100	155	124	62	72	117	62	12	71
8	78	111	115	395	131	185	58	93	103	57	11	72
9	98	290	89	207	98	104	53	112	139	50	11	92
10	70	443	822	150	74	77	60	121	105	54	11	196
11	52	226	838	109	59	63	84	147	116	53	11	130
12	52	201	485	85	48	53	67	124	112	48	36	93
13	95	171	571	73	42	48	59	244	123	46	24	70
14	54	446	539	74	39	44	53	288	99	43	19	56
15	43	214	302	85	36	40	51	221	97	38	198	84
16	44	148	167	71	31	43	58	201	86	71	156	72
17	37	106	118	56	29	57	60	164	87	80	74	87
18	33	80	93	49	34	73	81	141	105	54	47	76
19	30	61	74	45	51	80	93	171	94	43	90	59
20	28	49	60	47	63	77	105	194	97	39	53	49
21	26	42	53	87	75	83	99	171	91	35	42	86
22	25	39	48	79	79	109	99	124	78	32	36	620
23	49	36	43	56	131	161	92	93	64	29	31	550
24	94	42	39	48	109	228	92	76	61	26	39	180
25	177	874	37	49	74	560	117	70	62	24	64	110
26	124	599	34	50	59	389	151	82	62	27	55	80
27	78	325	30	45	50	216	295	179	78	36	37	68
28	58	500	29	43	45	250	172	180	94	23	30	59
29	94	726	55	42	---	175	128	120	98	20	26	57
30	258	192	54	37	---	166	106	93	75	19	25	49
31	160	---	39	34	---	135	---	107	---	17	63	---
TOTAL	2172	8150	7813	2970	2292	3735	2813	4101	3295	1506	1286	4029
MEAN	70.1	272	252	95.8	81.9	120	93.8	132	110	48.6	41.5	134
MAX	258	1010	1360	395	226	560	295	288	207	132	198	620
MIN	25	36	29	29	29	30	51	62	61	17	11	49
CFSM	6.15	23.9	22.1	8.40	7.18	10.5	8.23	11.6	9.65	4.26	3.64	11.8
IN.	7.09	26.59	25.49	9.69	7.48	12.19	9.18	13.38	10.75	4.91	4.20	13.15
AC-FT	4310	16170	15500	5890	4550	7410	5580	8130	6540	2990	2550	7990

CAL YR 1977 TOTAL 42941.3 MEAN 118 MAX 1630 MIN 8.7 CFSM 10.4 IN 140.11 AC-FT 85170
WTR YR 1978 TOTAL 44162.0 MEAN 121 MAX 1360 MIN 11 CFSM 10.6 IN 144.09 AC-FT 87600

12137260 WILLIAMSON CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°59'09", long 121°36'00", in NW¼SW¼ sec.24, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 0.4 mi (0.6 km) upstream from mouth, and 13.0 mi (20.9 km) northeast of Sultan.

DRAINAGE AREA.--15.6 mi² (40.4 km²).

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft (427 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,240 ft³/s (91.8 m³/s) Nov. 25, 1977, gage height, 6.64 ft (2.024 m); minimum, 28 ft³/s (0.79 m³/s) Aug. 23, 1977, gage height, 1.40 ft (0.427 m); minimum gage height, 1.06 ft (0.323 m) Jan. 10, 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,240 ft³/s (91.8 m³/s) Nov. 25, gage height, 6.64 ft (2.024 m); minimum, 35 ft³/s (0.99 m³/s) Aug. 8, 9, 10, gage height, 1.69 ft (0.515 m); minimum gage height, 1.48 ft (0.451 m) Oct. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	1380	727	73	70	72	152	120	131	89	44	389
2	77	814	1890	67	145	65	140	110	150	102	43	426
3	68	345	595	150	330	62	129	110	175	92	42	212
4	61	225	316	546	199	58	129	108	188	83	42	156
5	54	186	202	356	208	58	129	98	196	76	41	151
6	50	229	418	234	285	56	114	89	178	72	40	156
7	95	326	341	178	208	106	102	87	140	73	37	133
8	87	192	180	519	208	175	96	91	125	75	36	123
9	94	363	143	319	165	120	91	100	150	75	35	129
10	74	565	1090	228	134	100	91	112	127	73	36	293
11	64	392	1170	178	114	91	110	231	123	70	37	266
12	69	342	690	148	96	83	102	228	123	64	55	198
13	113	325	711	129	85	82	92	334	125	64	52	150
14	76	575	630	125	76	78	83	337	123	64	48	121
15	65	343	451	125	73	73	78	319	114	64	213	159
16	64	283	295	112	65	76	82	319	102	89	148	139
17	58	207	205	100	61	92	98	243	96	89	99	156
18	51	160	162	91	65	106	114	194	100	73	80	137
19	48	129	134	83	76	108	116	188	100	68	190	116
20	44	106	112	83	91	104	136	196	102	65	114	100
21	41	88	100	125	100	110	150	199	96	64	90	135
22	39	77	89	136	100	123	155	183	91	63	77	594
23	70	74	80	102	143	172	143	148	83	63	69	657
24	107	92	73	89	125	285	129	123	75	61	67	332
25	186	1500	68	91	108	555	129	108	72	58	88	210
26	159	1000	64	98	98	519	143	110	70	61	80	155
27	118	550	59	87	85	382	268	143	76	71	68	133
28	97	711	56	83	82	386	208	210	92	58	60	113
29	134	882	94	82	---	275	165	170	114	52	54	106
30	309	371	100	73	---	231	138	134	100	50	52	94
31	248	---	83	70	---	188	---	123	---	47	66	---
TOTAL	2909	12832	11328	4880	3595	4991	3812	5265	3537	2168	2203	6239
MEAN	93.8	428	365	157	128	161	127	170	118	69.9	71.1	208
MAX	309	1500	1890	546	330	555	268	337	196	102	213	657
MIN	39	74	56	67	61	56	78	87	70	47	35	94
CFSM	6.01	27.4	23.4	10.1	8.21	10.3	8.14	10.9	7.56	4.48	4.56	13.3
IN.	6.94	30.60	27.01	11.64	8.57	11.90	9.09	12.55	8.43	5.17	5.25	14.88
AC-FT	5770	25450	22470	9680	7130	9900	7560	10440	7020	4300	4370	12380

CAL YR 1977 TOTAL 63873 MEAN 175 MAX 1890 MIN 29 CFSM 11.2 IN 152.30 AC-FT 126700
WTR YR 1978 TOTAL 63759 MEAN 175 MAX 1890 MIN 35 CFSM 11.2 IN 152.03 AC-FT 126500

12137300 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, Snoqualmie National Forest, on right bank at Culmback Dam on Sultan River, 1.7 mi (2.7 km) downstream from South Fork, 7.8 mi (12.6 km) north of Startup and at mile 16.5 (26.5 km).

DRAINAGE AREA.--68.3 mi^2 (176.9 km^2).

PERIOD OF RECORD.--April 1965 to current year.

REVISED RECORDS.--WDR WA-77-1: 1976.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earth-fill dam completed to elevation 1,408 ft (429.16 m) in 1965; storage began Apr. 5, 1965. Capacity, 34,500 acre-ft (42.5 hm^3) between elevations 1,250 ft (381.0 m) and 1,360 ft (414.5 m), crest of spillway. No dead storage. Figures given herein represent total contents. Spada Lake is used to regulate the flow of the Sultan River to supplement city of Everett water supply.

COOPERATION.--Elevations furnished by city of Everett.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 40,470 acre-ft (49.9 hm^3) Dec. 2, 1975, elevation, 1,367.3 ft (416.75 m); minimum observed since reservoir was first filled, 4,250 acre-ft (5.24 hm^3) Sept. 30, 1967, elevation, 1,301.28 ft (396.630 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,220 acre-ft (48.4 hm^3) Dec. 2, elevation, 1,365.9 ft (416.33 m); minimum observed, 29,800 acre-ft (36.7 hm^3) Aug. 14, elevation, 1,354.0 ft (412.70 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,360.2	34,660	------
Oct. 31	1,361.7	35,860	+1,200
Nov. 30	1,360.5	34,900	-960
Dec. 31	1,357.0	32,100	-2,800
CAL YR 1977	-----	-----	-2,480
Jan. 31	1,359.8	34,340	+2,240
Feb. 28	1,360.0	34,500	+160
Mar. 31	1,360.7	35,060	+560
Apr. 30	1,360.5	34,900	-160
May 31	1,360.5	34,900	0
June 30	1,360.2	34,660	-240
July 31	1,358.3	33,140	-1,520
Aug. 31	1,355.8	31,140	-2,000
Sept. 30	1,360.1	34,580	+3,440
WTR YR 1978	-----	-----	-80

12138150 SULTAN RIVER BELOW CHAPLAIN CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°54'52", long 121°48'36", in NE¼SW¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank, 0.8 mi (1.3 km) downstream from Chaplain Creek, 3.5 mi (5.6 km) north of Sultan, at river mi 5.1 (8.2 km).

DRAINAGE AREA.--92.6 mi^2 (239.8 km^2).

PERIOD OF RECORD.--November 1974 to current year..

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 320 ft (98 m) from topographic map.

REMARKS.--Records good. City of Everett diverted about 123 ft^3/s (3.48 m^3/s) daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake since Apr. 5, 1966.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft^3/s (697 m^3/s) Dec. 2, 1975, gage height, 13.19 ft (4.020 m); minimum, 53 ft^3/s (1.50 m^3/s) Aug. 16, 17, 18, 20, 1977, gage height, 2.41 ft (0.735 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,600 ft^3/s (527 m^3/s) Dec. 2, gage height, 11.90 ft (3.627 m); minimum, 73 ft^3/s (2.07 m^3/s) Aug. 3, gage height, 2.53 ft (0.771 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	353	3910	3560	236	355	310	690	497	486	241	103	426
2	296	4640	13600	228	543	292	684	442	561	325	85	1170
3	264	1730	3880	390	1210	283	639	481	677	395	83	1010
4	257	1380	2060	998	967	274	627	481	789	345	106	603
5	257	1600	1700	1990	736	274	555	442	838	301	93	503
6	254	1080	1750	1430	1210	270	531	370	755	262	85	555
7	319	498	1710	873	982	390	453	297	591	224	90	525
8	280	514	1650	1820	945	503	400	297	431	209	90	431
9	366	894	1050	1630	796	591	345	350	453	201	83	437
10	391	2270	1890	982	633	492	306	437	508	241	83	960
11	311	1720	5920	703	481	442	325	873	481	262	90	1010
12	271	1380	3710	627	405	365	345	937	492	205	93	762
13	534	1200	2900	525	355	350	310	1020	639	190	98	543
14	443	1950	3090	420	330	380	292	1620	525	176	109	405
15	325	1730	2490	375	325	335	288	1570	537	155	448	503
16	284	1490	1980	380	310	306	330	1440	525	165	710	531
17	262	1460	1230	400	297	325	426	1190	340	149	525	561
18	252	906	894	325	360	365	426	866	315	194	355	519
19	244	403	690	288	350	385	481	782	345	136	380	426
20	235	360	492	274	262	395	684	852	340	136	249	360
21	229	327	395	410	266	375	603	894	310	133	224	395
22	235	321	340	658	274	415	723	789	297	120	198	1990
23	243	317	325	453	375	603	729	627	270	106	172	3790
24	247	305	315	274	573	1180	585	475	245	101	165	2040
25	267	1610	306	345	481	2140	555	390	228	106	205	1260
26	400	5420	301	497	420	2380	651	370	209	106	249	671
27	435	2650	292	410	350	1580	1210	514	194	120	224	531
28	327	3950	279	315	340	1580	1200	945	217	139	205	492
29	395	4590	400	340	---	1270	789	749	288	142	198	437
30	1230	2190	395	310	---	1050	597	561	306	120	198	330
31	1310	---	270	301	---	894	---	470	---	115	224	---
TOTAL	11516	52795	59864	19207	14931	20794	16779	22028	13192	5820	6220	24176
MEAN	371	1760	1931	620	533	671	559	711	440	188	201	806
MAX	1310	5420	13600	1990	1210	2380	1210	1620	838	395	710	3790
MIN	229	305	270	228	262	270	288	297	194	101	83	330
AC-FT	22840	104700	118700	38100	29620	41240	33280	43690	26170	11540	12340	47950

CAL YR 1977 TOTAL 273684 MEAN 750 MAX 13600 MIN 53 AC-FT 542900
WTR YR 1978 TOTAL 267322 MEAN 732 MAX 13600 MIN 83 AC-FT 530200

12141100 SKYKOMISH RIVER AT MONROE, WA

LOCATION.--Lat 47°51'08", long 121°57'29", in SE¼SW¼ sec.6, T.27 N., R.7 E., Snohomish County, Hydrologic unit 17110009, at State Highway 203 bridge at Monroe, 0.1 mi (0.2 km) downstream from Woods Creek and at mile 25.0 (40.2 km).

DRAINAGE AREA.--834 mi^2 (2,160 km^2).

PERIOD OF RECORD.--Water years 1965-69, 1974, 1977 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT, 1977							
03...	1300	2100	45	7.0	10.3	10	1
NOV							
28...	1315	22000	30	6.3	6.0	40	22
DEC							
19...	1335	8000	43	6.9	5.0	25	5
JAN, 1978							
16...	1345	3700	40	7.1	5.2	15	3
FEB							
21...	1300	2930	43	7.5	6.7	40	2
MAR							
06...	1300	2350	48	7.3	5.4	10	1
APR							
03...	1300	5300	35	7.1	7.3	15	4
MAY							
01...	1300	5340	35	7.3	8.6	5	2
JUN							
19...	1215	5700	28	7.2	11.5	15	4
JUL							
17...	1230	3030	32	7.3	13.4	5	2
AUG							
07...	1315	1780	35	7.7	19.2	0	2
SEP							
18...	1545	3040	34	7.3	11.0	15	1

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT, 1977						
03...	12.5	.15	.05	.01	.00	.00
NOV						
28...	13.2	.20	.11	.05	.00	.00
DEC						
19...	12.9	.24	.06	.01	.00	.00
JAN, 1978						
16...	12.2	.22	.03	.01	.00	.00
FEB						
21...	13.0	.17	.08	.02	.01	.03
MAR						
06...	13.1	.17	.03	.00	.00	.00
APR						
03...	12.0	.12	.05	.01	.00	.00
MAY						
01...	11.8	.08	.06	.01	.00	.00
JUN						
19...	11.0	.03	.04	.02	.00	.00
JUL						
17...	12.1	.04	.01	.00	.00	.00
AUG						
07...	11.0	.05	.01	.01	.00	.00
SEP						
18...	10.5	.12	.09	.02	.00	.00

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW¼SE¼ sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi (1.1 km) downstream from Granite Creek, 6.4 mi (10.3 km) east of North Bend, and at mile 55.6 (89.5 km).

DRAINAGE AREA.--154 mi² (399 km²).

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 780 ft (238 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--17 years, 1,300 ft³/s (36.82 m³/s) 114.64 in/yr (2,912 mm/yr), 941,800 acre-ft/yr (1,161 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s (855 m³/s) Dec. 2, 1977, gage height, 14.93 ft (4.551 m); minimum, 130 ft³/s) (3.68 m³/s) Oct. 25, 26, 27, 1974, gage height, 1.04 ft (0.317 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 18.7 ft (5.70 m), from floodmarks, discharge, 49,000 ft³/s (1,390 m³/s) by slope-area measurement at site 6 miles (9.7 km) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	15,100	428	10.82	3.298
Nov. 25	2400	16,500	467	11.30	3.444
Dec. 2	unknown	*30,200	855	*14.93	4.551
Dec. 10	2200	11,600	329	9.65	2.941
Dec. 14	0300	9,030	256	8.71	2.655

Minimum discharge, 252 ft³/s (7.14 m³/s) Aug. 14, gage height, 1.59 ft (0.485 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	560	6420	10000	394	473	535	1150	1060	1310	944	310	1350
2	470	5580	20000	379	732	479	980	1030	1610	872	307	1200
3	430	1890	8930	461	1300	432	893	1090	1960	814	312	757
4	390	1250	3520	1650	1140	422	861	1100	2230	771	323	648
5	360	967	2070	1670	1140	407	880	949	2290	721	313	657
6	340	1010	3380	1360	1530	393	789	894	2030	707	286	790
7	484	2270	2750	992	1170	653	694	904	1620	730	270	691
8	481	1260	1680	2170	1100	1100	644	999	1420	786	261	650
9	679	1580	1300	1670	903	795	602	1200	1640	740	268	675
10	520	3340	4490	1310	761	666	624	1330	1500	642	272	1100
11	429	2310	8380	1060	656	609	880	1640	1210	630	285	1140
12	387	1840	5920	934	582	598	743	1520	1160	572	309	912
13	502	1720	6020	855	528	637	664	1640	1290	581	288	711
14	446	3580	7150	824	485	711	615	2280	1160	597	268	596
15	383	2610	4220	831	467	629	585	2170	1020	561	987	682
16	368	1950	2650	760	423	601	694	1920	973	684	1130	814
17	352	1420	1810	696	401	639	711	1720	916	768	799	1020
18	323	1120	1410	629	455	737	772	1480	1130	612	530	1020
19	305	903	1160	585	587	756	836	1600	1140	543	621	740
20	289	750	968	557	611	713	975	1980	1120	519	510	660
21	278	644	850	684	639	744	936	2120	1160	506	411	620
22	268	600	768	778	672	938	978	1620	1050	508	414	1300
23	364	579	690	635	801	1310	1000	1260	966	512	404	3500
24	440	619	663	564	850	1610	930	1010	882	485	429	1800
25	1190	6470	666	557	719	2370	1010	894	928	427	513	1200
26	1070	8130	603	767	684	2210	1390	887	907	410	422	944
27	763	3560	543	636	592	1700	2110	1190	924	448	358	805
28	596	4580	506	576	586	1660	1860	1710	1090	398	322	709
29	687	5760	514	569	---	1570	1470	1470	1220	360	302	633
30	1640	2590	513	516	---	1570	1220	1140	1060	334	293	585
31	1270	---	443	481	---	1440	---	1080	---	319	395	---
TOTAL	17064	77302	104567	26550	20987	29634	28496	42887	38916	18501	12912	28909
MEAN	550	2577	3373	856	750	956	950	1383	1297	597	417	964
MAX	1640	8130	20000	2170	1530	2370	2110	2280	2290	944	1130	3500
MIN	268	579	443	379	401	393	585	887	882	319	261	585
CFSM	3.57	16.7	21.9	5.56	4.87	6.21	6.17	8.98	8.42	3.88	2.71	6.26
IN.	4.12	18.67	25.26	6.41	5.07	7.16	6.88	10.36	9.40	4.47	3.12	6.98
AC-FT	33850	153300	207400	52660	41630	58780	56520	85070	77190	36700	25610	57340

CAL YR 1977 TOTAL 442637 MEAN 1213 MAX 20000 MIN 182 CFSM 7.88 IN 106.92 AC-FT 878000
WTR YR 1978 TOTAL 446725 MEAN 1224 MAX 20000 MIN 261 CFSM 7.95 IN 107.91 AC-FT 886100

NOTE.--No gage-height record Dec. 1-2.

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'54", long 121°42'44", in NW¼NW¼ sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Calligan Creek, 7.0 mi (11.3 km) northeast of town of Snoqualmie Falls, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--64.0 mi² (165.8 km²).

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M). WSP 1736: 1932-34(M), 1935, 1938(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,130 ft (344 m), from topographic map. Prior to Oct. 19, 1949, water-stage recorder, and October 1949 to February 1951, crest-stage gage, at site 1,500 ft (460 m) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--37 years (water years 1930-49, 1962-78), 505 ft³/s (14.30 m³/s) 107.15 in/yr (2,722 mm/yr), 365,900 acre-ft/yr (451 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s (447 m³/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 2,200 ft³/s (62.3 m³/s) on basis of slope-area measurement at gage height 16.47 ft (5.020 m); minimum observed, 30 ft³/s (0.85 m³/s) Sept. 17-19, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2200	5,020	142	8.51	2.594	Dec. 2	0900	*10,500	297	*11.45	3.490
Nov. 25	2100	6,970	197	9.65	2.941	Dec. 10	2300	5,240	148	8.65	2.637

Minimum discharge, 62 ft³/s (1.76 m³/s) Aug. 9, 10, 11, gage height, 2.05 ft (0.625 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	2070	2860	213	240	235	416	372	468	242	91	778
2	220	1420	6660	200	400	213	379	365	533	309	87	640
3	191	620	2150	309	680	196	368	404	620	270	84	389
4	172	424	1160	1360	574	191	362	393	660	265	81	318
5	156	337	745	1090	592	185	390	348	655	242	77	361
6	146	347	1160	796	832	178	348	337	560	220	72	400
7	187	1320	1120	516	565	333	306	344	456	213	69	327
8	180	533	650	1240	538	605	288	354	379	207	67	288
9	252	922	508	856	432	358	265	424	496	194	64	300
10	194	1900	2190	610	354	288	262	516	424	194	62	516
11	168	982	3110	484	306	255	358	695	347	205	63	496
12	154	814	2140	432	267	242	294	534	351	194	95	375
13	257	685	2410	396	242	245	262	601	448	176	112	294
14	213	1220	2540	393	227	250	245	922	468	166	107	250
15	176	892	1590	389	218	227	235	868	424	154	625	361
16	170	675	1070	340	202	222	255	856	416	183	695	365
17	162	508	730	309	191	240	270	745	351	247	408	476
18	148	400	578	276	211	285	330	583	375	198	257	440
19	138	324	480	252	288	288	372	596	340	172	416	340
20	129	273	400	242	300	270	428	660	330	166	297	285
21	123	237	354	344	303	262	420	645	330	150	230	306
22	120	225	324	404	303	327	432	496	294	138	202	862
23	187	220	297	303	393	464	440	440	262	129	194	1290
24	247	260	285	260	400	625	416	351	240	120	189	954
25	802	2720	297	252	321	1020	468	303	267	112	230	575
26	720	2830	270	340	324	928	574	315	267	116	220	420
27	408	1290	245	297	273	625	862	569	262	154	183	347
28	291	1510	230	270	257	650	665	760	309	118	162	299
29	365	2010	270	282	---	583	508	601	327	107	146	266
30	874	904	294	255	---	551	428	448	268	99	134	250
31	565	---	245	240	---	529	---	400	---	94	168	---
TOTAL	8380	29072	37362	13950	10233	11870	11646	16245	11927	5554	5887	13568
MEAN	270	969	1205	450	365	383	388	524	398	179	190	452
MAX	874	2830	6660	1360	832	1020	862	922	660	309	695	1290
MIN	120	220	230	200	191	178	235	303	240	94	62	250
CFSM	4.22	15.1	18.8	7.03	5.70	5.98	6.06	8.19	6.22	2.80	2.97	7.06
IN.	4.87	16.90	21.72	8.11	5.95	6.90	6.77	9.44	6.93	3.23	3.42	7.89
AC-FT	16620	57660	74110	27670	20300	23540	23100	32220	23660	11020	11680	26910

CAL YR 1977 TOTAL 174235 MEAN 477 MAX 6660 MIN 48 CFSM 7.45 IN 101.27 AC-FT 345600
WTR YR 1978 TOTAL 175694 MEAN 481 MAX 6660 MIN 62 CFSM 7.52 IN 102.12 AC-FT 348500

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA

LOCATION.--Lat 47°24'55", long 121°35'10", in SW¼SW¼ sec.6, T.22 N., R.10 E., King County, Hydrologic Unit 17110010, Snoqualmie National Forest, on left bank 0.4 mi (0.6 km) upstream from Alice Creek, 1.5 mi (2.4 km) southeast of Garcia, 11 mi (17.7 km) southeast of North Bend, and at mile 17.3 (27.8 km).

DRAINAGE AREA.--41.6 mi² (107.7 km²).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October to November 1971.

GAGE.--Water-stage recorder. Datum of gage is 1,447.67 ft (441.250 m) Washington Highway Department datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 309 ft³/s (8.751 m³/s), 100.87 in/yr (2,560 mm/yr), 223,900 acre-ft/yr (276 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,090 ft³/s (201 m³/s) Nov. 19, 1962, gage height, 11.96 ft (3.645 m); minimum, 25 ft³/s (0.71 m³/s) Oct. 25, 26, 27, 1974, gage height, 0.99 ft (0.302 m); minimum gage height, 0.60 ft (0.183 m) part of each day Aug. 17-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in November and December 1959 reached stages of 14.7 ft (4.48 m) and 13.4 ft (4.08 m) respectively, from flood marks, discharges not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	4,000	113	5.75	1.753	Dec. 2	0800	*5,980	169	*7.27	2.216
Nov. 25	1900	3,850	109	5.63	1.716	Dec. 14	0100	1,860	52.7	3.75	1.143

Minimum discharge, 46 ft³/s (1.30 m³/s) Aug. 8, 9, 10, gage height, 0.16 ft (0.049 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	1610	2380	151	114	144	364	340	400	177	57	163
2	128	1170	4060	141	134	132	315	348	474	164	56	134
3	115	409	1910	137	194	123	284	360	540	151	55	98
4	102	262	922	146	200	120	280	333	585	146	54	88
5	96	192	610	167	225	116	260	287	570	139	52	95
6	94	228	920	174	287	112	228	273	474	139	50	105
7	110	455	860	167	270	172	209	291	392	141	49	95
8	105	259	456	183	257	194	203	340	368	139	47	95
9	131	260	384	200	228	174	200	392	447	127	46	97
10	107	668	665	206	197	167	234	392	412	116	46	140
11	96	502	1230	200	177	164	294	460	322	116	51	151
12	90	438	1130	191	161	159	240	433	312	107	57	130
13	98	408	1240	183	149	167	221	465	312	107	53	108
14	88	861	1490	177	139	167	200	630	277	103	53	96
15	82	632	1020	174	132	159	194	550	260	99	162	114
16	80	451	715	169	123	159	225	474	257	118	129	168
17	76	330	530	167	116	172	212	447	257	118	95	209
18	72	257	429	159	134	206	221	429	291	101	75	176
19	70	200	380	154	159	228	240	505	273	95	79	151
20	68	159	336	151	172	234	277	595	273	91	71	134
21	64	129	305	151	169	270	260	570	263	87	64	133
22	62	118	277	167	183	344	257	429	237	83	69	259
23	84	105	257	161	200	442	250	336	212	80	65	575
24	115	98	237	149	212	460	244	291	203	76	68	360
25	259	1360	221	146	191	615	284	280	221	71	70	247
26	216	1640	209	164	177	575	408	287	200	70	64	197
27	167	868	197	149	161	501	565	368	209	70	59	183
28	137	994	186	139	159	515	515	456	228	64	56	161
29	149	1480	177	132	---	492	412	376	228	62	54	149
30	380	844	169	125	---	496	364	315	189	60	52	137
31	299	---	164	120	---	442	---	340	---	58	72	---
TOTAL	3886	17387	24066	5000	5020	8421	8460	12392	9686	3275	2030	4948
MEAN	125	580	776	161	179	272	282	400	323	106	65.5	165
MAX	380	1640	4060	206	287	615	565	630	585	177	162	575
MIN	62	98	164	120	114	112	194	273	189	58	46	88
CFSM	3.01	13.9	18.7	3.87	4.30	6.54	6.78	9.62	7.76	2.55	1.58	3.97
IN.	3.47	15.55	21.52	4.47	4.49	7.53	7.57	11.08	8.66	2.93	1.82	4.42
AC-FT	7710	34490	47730	9920	9960	16700	16780	24580	19210	6500	4030	9810

CAL YR 1977 TOTAL 100992 MEAN 277 MAX 4060 MIN 30 CFSM 6.66 IN 90.31 AC-FT 200300
WTR YR 1978 TOTAL 104571 MEAN 286 MAX 4060 MIN 46 CFSM 6.88 IN 93.51 AC-FT 207400

12143700 BOXLEY CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'58", long 121°45'04", in NE¼SW¼ sec.35, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on left bank 1.7 mi (2.7 km) northeast of Cedar Falls and 2.5 mi (4.0 km) upstream from mouth.

DRAINAGE AREA.--1.57 mi² (4.07 km²).

PERIOD OF RECORD.--August 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (372 m), from topographic map.

REMARKS.--Records fair. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--33 years, 25.4 ft³/s (0.719 m³/s) 18,400 acre-ft/yr (22.7 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189 ft³/s (5.35 m³/s) Dec. 19, 1977; maximum gage height recorded, 2.88 ft (0.878 m) Dec. 19, 1977; no flow part or all of each day Oct. 28 to Nov. 9, 1966, Nov. 5-8, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 189 ft³/s (5.35 m³/s) Dec. 19, gage height, 2.88 ft (0.878 m); minimum daily, 0.50 ft³/s (0.014 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.4	16	44	12	5.4	2.3	13	34	16	7.4	1.5
2	1.2	1.3	25	41	12	5.1	2.3	14	32	15	7.3	1.2
3	1.2	1.2	33	38	11	5.1	2.3	14	31	15	7.0	1.0
4	1.2	1.2	55	38	11	4.9	2.3	15	31	14	6.8	.93
5	1.2	1.2	99	36	11	4.9	2.3	15	31	14	6.7	.89
6	1.2	1.2	141	34	10	4.7	2.3	16	30	13	6.5	.85
7	1.2	1.3	156	32	10	4.7	2.5	16	30	13	6.4	.76
8	1.2	1.1	147	30	9.7	4.5	2.5	17	30	13	6.2	.76
9	1.2	1.1	125	28	9.3	4.2	2.6	18	30	13	6.1	.76
10	1.2	1.1	119	26	8.9	4.2	2.9	19	29	13	5.8	.72
11	1.2	1.1	91	25	8.5	4.0	3.1	20	29	13	5.8	.72
12	1.2	1.1	81	23	8.5	4.0	3.5	20	29	12	5.6	.68
13	1.2	1.2	104	21	8.2	4.0	3.6	21	28	12	5.3	.68
14	1.2	1.4	91	20	7.9	3.8	4.0	22	27	11	5.1	.63
15	1.2	1.3	93	20	7.6	3.8	4.7	23	26	11	5.1	.72
16	1.2	1.4	132	19	7.3	3.6	5.1	24	25	11	4.8	.68
17	1.2	1.5	125	19	7.3	3.6	5.4	25	25	11	4.4	.68
18	1.2	1.6	122	19	7.0	3.5	5.8	27	25	10	4.2	.63
19	1.2	1.8	147	18	7.0	3.3	6.7	29	24	9.4	4.0	.59
20	1.2	1.9	130	18	6.7	3.1	7.3	29	22	9.2	3.6	.59
21	1.2	2.1	127	17	6.4	3.1	7.9	30	22	9.2	3.3	.59
22	1.2	2.5	114	17	6.4	2.9	8.5	31	21	8.9	3.1	.68
23	1.3	2.9	109	16	6.1	2.9	8.9	32	20	8.9	2.8	.68
24	1.3	3.8	99	16	6.1	2.8	9.7	33	20	8.7	2.7	.59
25	1.3	5.5	83	15	5.8	2.8	10	32	19	8.5	2.3	.56
26	1.3	6.6	78	15	5.8	2.6	11	34	19	8.4	2.1	.56
27	1.2	7.9	72	14	5.6	2.5	11	34	18	8.4	1.9	.56
28	1.2	9.2	62	14	5.6	2.5	11	34	17	8.2	1.6	.53
29	1.3	12	56	13	---	2.5	12	34	17	8.1	1.5	.50
30	1.3	12	51	13	---	2.3	13	32	16	7.7	1.4	.50
31	1.2	---	47	12	---	2.3	---	32	---	7.6	1.7	---
TOTAL	37.8	90.9	2930	711	228.7	113.6	176.5	755	757	341.2	138.5	21.72
MEAN	1.22	3.03	94.5	22.9	8.17	3.66	5.88	24.4	25.2	11.0	4.47	.72
MAX	1.3	12	156	44	12	5.4	13	34	34	16	7.4	1.5
MIN	1.2	1.1	16	12	5.6	2.3	2.3	13	16	7.6	1.4	.50
AC-FT	75	180	5810	1410	454	225	350	1500	1500	677	275	43

CAL YR 1977 TOTAL 5392.71 MEAN 14.8 MAX 156 MIN .42 AC-FT 10700
WTR YR 1978 TOTAL 6301.92 MEAN 17.3 MAX 156 MIN .50 AC-FT 12500

12145800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW¼SW¼ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore and 0.6 mi (1.0 km) northeast of Cedar Falls.

DRAINAGE AREA.--1.86 mi² (4.82 km²).

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in the district office.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft (2.210 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--No diversion. Inflow is mostly seepage from Chester Morse Lake.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft (277.917 m) Nov. 25, 26, 1959; minimum observed, 852.80 ft (259.933 m) Jan. 9, 1953, but may have been less during periods Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 909.30 ft (277.155 m) Dec. 17; minimum observed, 877.85 ft (267.569 m) Sept. 30.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 0730

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	886.70	881.15	890.54	907.70	905.10	900.64	893.46	895.48	904.18	904.34	897.92	888.10
2	886.45	881.08	892.20	907.50	905.12	900.36	893.20	895.81	904.30	904.23	897.68	887.74
3	886.18	881.00	894.50	907.62	905.04	900.10	892.98	896.14	904.44	904.10	897.42	887.39
4	885.96	880.90	895.58	907.64	904.90	899.84	892.74	896.50	904.58	903.98	897.14	887.02
5	885.80	880.90	898.26	907.60	904.86	899.76	892.54	896.80	904.72	903.84	896.86	886.55
6	885.48	880.88	898.66	907.58	904.82	899.48	892.32	897.16	904.86	903.70	896.54	886.30
7	885.30	880.82	900.78	907.55	904.74	899.28	892.16	897.42	904.96	903.54	896.23	885.96
8	885.09	880.81	901.90	907.50	904.67	899.02	892.00	897.74	905.08	903.36	895.92	885.54
9	884.92	880.81	902.88	907.45	904.61	898.78	891.84	898.04	905.22	903.22	895.60	885.18
10	884.70	880.70	903.88	907.40	904.46	898.52	891.74	898.32	905.30	903.06	895.28	884.82
11	884.49	880.60	904.60	907.36	904.28	898.22	891.64	898.60	905.32	902.88	895.14	884.46
12	884.29	880.66	906.20	907.24	904.18	898.08	891.54	898.92	905.34	902.72	894.72	884.06
13	884.10	880.62	907.12	907.08	904.06	897.78	891.48	899.20	905.40	902.50	894.46	883.64
14	883.86	880.70	909.08	907.02	903.84	897.68	891.44	899.51	905.44	902.28	894.15	883.24
15	883.62	880.72	908.74	906.90	903.68	897.48	891.42	899.90	905.48	902.08	893.90	882.86
16	883.42	880.84	909.10	906.76	903.38	897.32	891.50	900.07	905.46	901.84	893.58	882.50
17	883.28	881.08	909.30	906.64	903.30	897.08	891.55	900.40	905.46	901.66	893.28	882.16
18	883.09	881.38	909.28	906.48	903.02	896.84	891.64	900.78	905.42	901.42	892.92	881.80
19	882.90	881.64	909.18	906.36	902.86	896.65	891.78	901.16	905.36	901.19	892.62	881.39
20	882.74	881.90	909.02	906.22	902.60	896.42	892.00	901.53	905.30	900.94	892.30	881.01
21	882.50	882.10	908.90	906.10	902.36	896.18	892.18	901.80	905.22	900.74	891.96	880.68
22	882.30	882.42	908.76	905.90	902.10	895.94	892.38	902.14	905.14	900.48	891.62	880.28
23	882.20	882.80	908.58	905.88	901.90	895.62	892.78	902.50	905.08	900.24	891.30	880.02
24	882.08	883.20	908.36	905.76	901.64	895.44	893.05	902.76	905.00	899.99	890.96	879.69
25	882.00	883.70	908.22	905.66	901.44	895.20	893.40	903.02	904.94	899.70	890.60	879.32
26	881.86	884.64	908.02	905.62	901.28	895.00	893.76	903.32	904.85	899.48	890.22	879.01
27	881.68	885.80	907.86	905.56	901.02	894.72	894.16	903.46	904.76	899.24	889.86	878.68
28	881.52	886.98	907.86	905.47	900.82	894.48	894.50	903.64	904.66	898.98	889.48	878.50
29	881.44	888.16	907.94	905.40	---	894.30	894.84	903.82	904.56	898.70	889.10	878.10
30	881.30	889.30	907.86	905.30	---	893.96	895.16	904.03	904.47	898.40	888.76	877.85
31	881.24	---	907.75	905.20	---	893.70	---	904.06	---	898.18	888.38	---
MEAN	883.63	882.28	904.87	906.63	903.43	897.22	892.57	900.13	905.01	901.65	893.42	882.80
MAX	886.70	889.30	909.30	907.70	905.12	900.64	895.16	904.06	905.48	904.34	897.92	888.10
MIN	881.24	880.60	890.54	905.20	900.82	893.70	891.42	895.48	904.18	898.18	888.38	877.85

WTR YR 1978 MEAN 896.14 MAX 909.30 MIN 877.85

12144400 SNOQUALMIE RIVER AT SNOQUALMIE, WA

LOCATION.--Lat 47°31'37", long 121°48'40", on east line of NW¼ sec.32, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, at 7th Avenue bridge in Meadowbrook, 1 mi (1.6 km) east of Snoqualmie, 2.3 mi (3.7 km) upstream from gaging station (12144500), and at mile 42.3 (68.1 km).

DRAINAGE AREA.--375 mi^2 (971 km^2).

PERIOD OF RECORD.--Water years 1959-70, 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
03...	1200	1110	45	6.5	9.2	10	1
NOV							
28...	1220	9580	26	6.9	6.5	50	11
DEC							
19...	1220	3600	40	6.8	5.1	25	11
JAN , 1978							
16...	1205	2020	40	7.1	5.8	15	2
FEB							
21...	1155	1620	41	7.5	7.0	45	2
MAR							
06...	1145	1140	49	7.2	6.3	15	1
APR							
03...	1140	2290	35	7.2	7.0	15	4
MAY							
01...	1130	2590	34	7.3	8.0	10	3
JUN							
19...	1050	2400	29	7.2	11.2	15	2
JUL							
17...	1120	1490	30	7.4	12.8	15	1
AUG							
07...	1210	600	49	8.0	17.2	0	2
SEP							
18...	1415	2140	27	7.2	10.0	20	3

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
03...	12.1	.17	.06	.01	.00	.00
NOV						
28...	13.1	.20	.08	.04	.00	.00
DEC						
19...	12.5	1.1	.11	.01	.00	.00
JAN , 1978						
16...	11.8	.22	.03	.02	.01	.03
FEB						
21...	12.8	.16	.04	.01	.00	.00
MAR						
06...	12.4	.17	.03	.02	.00	.00
APR						
03...	11.9	.13	.05	.01	.00	.00
MAY						
01...	11.5	.10	.02	.01	.00	.00
JUN						
19...	10.4	.10	.04	.01	.00	.00
JUL						
17...	11.4	.09	.01	.01	.00	.00
AUG						
07...	10.5	.12	.04	.01	.00	.00
SEP						
18...	10.9	.19	.11	.01	.00	.00

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'28", in SW¼SW¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank 0.3 mi (0.5 km) downstream from Snoqualmie Falls, 0.4 mi (0.6 km) upstream from Tokul Creek, 1.5 mi (2.4 km) northwest of Snoqualmie, and at mile 40.0 (64.4 km).

DRAINAGE AREA.--375 mi² (971 km²).

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to July 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (36.6 m), from river-profile map. Prior to Nov. 3, 1902, and Nov. 1, to Dec. 31, 1906, nonrecording gages above and below Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi (6.4 km) upstream and 300 ft (91 m) downstream from South Fork, at different datum.

REMARKS.--Records good. Medium and low flows affected by powerplant 0.1 mi (0.2 km) above station. No regulation.

AVERAGE DISCHARGE8 years (water years, 1899, 1903-04, 1908-32, 1959-78), 2,610 ft³/s (73.9 m³/s), 1,891,000 acre-ft/yr (2,330 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft³/s (1,730 m³/s) Nov. 23, 1959, gage height, 19.78 ft (6.029 m); minimum, 9.7 ft³/s (0.27 m³/s) Aug. 14, 27, 1958, gage height, -0.53 ft (-0.162 m); minimum daily, 88 ft³/s (2.49 m³/s) Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53,800 ft³/s (1,520 m³/s) Dec. 2, gage height, 18.88 ft (5.755 m); minimum, 372 ft³/s (10.5 m³/s) Aug. 9, gage height, 2.73 ft (0.832 m); minimum daily, 583 ft³/s (16.5 m³/s) Aug. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1440	7310	10200	1360	1380	1380	2810	2580	2820	1740	692	2410
2	1240	12200	42100	1260	1880	1340	2440	2450	3310	1680	680	2800
3	1100	4640	18400	1420	3000	1210	2280	2660	3850	1590	676	1770
4	1010	3140	8470	3980	3140	1180	2170	2740	4280	1530	680	1470
5	907	2380	5440	4200	3110	1130	2250	2410	4410	1450	664	1510
6	874	2180	6540	3660	3670	1090	2040	2240	3980	1390	628	1700
7	1050	5320	6940	2680	3150	1470	1800	2250	3270	1380	604	1580
8	1020	3280	4570	4910	3140	2690	1690	2370	2780	1420	590	1460
9	1380	3340	3660	4190	2640	1970	1590	2720	3200	1370	583	1470
10	1160	6980	6720	3390	2270	1690	1590	3030	3200	1250	583	2080
11	992	5410	15700	2810	1930	1560	2160	3620	2510	1280	614	2310
12	908	4440	12100	2480	1760	1550	1890	3590	2350	1180	680	1930
13	1100	4090	11100	2320	1610	1590	1700	3570	2620	1140	704	1540
14	1110	6640	14300	2220	1470	1780	1590	4920	2580	1140	656	1330
15	919	5910	10000	2200	1340	1610	1520	4960	2260	1070	1780	1470
16	922	4590	7530	2030	1310	1530	1720	4480	2220	1210	2390	1810
17	887	3550	5340	1870	1300	1580	1750	4160	2030	1480	1840	2190
18	824	2860	4270	1720	1300	1780	1910	3570	2260	1240	1240	2220
19	793	2340	3600	1600	1580	1830	2120	3640	2260	1090	1400	1770
20	689	1960	3070	1530	1600	1780	2400	4200	2180	1040	1250	1530
21	788	1700	2690	1810	1620	1790	2350	4510	2220	1000	1030	1460
22	712	1580	2440	2110	1640	2170	2450	3560	2040	975	970	2870
23	803	1530	2220	1770	1800	2760	2530	2930	1870	960	960	7920
24	1010	1640	2090	1580	2160	3630	2360	2370	1720	920	935	4940
25	2520	7950	2060	1500	2000	4940	2460	2140	1780	861	1110	3210
26	2600	18200	1890	1920	1930	5120	3200	2140	1810	838	1010	2360
27	1990	7430	1720	1740	1580	3970	4540	2580	1750	940	885	1970
28	1510	8600	1620	1580	1480	3870	4330	3900	1950	834	802	1740
29	1640	10700	1630	1560	---	3710	3520	3430	2150	776	789	1560
30	3270	6270	1660	1450	---	3560	2940	2750	1950	740	720	1420
31	2950	---	1490	1380	---	3490	---	2480	---	708	789	---
TOTAL	40118	158160	221560	70210	56790	70750	70100	98950	77610	36222	28934	65800
MEAN	1294	5272	7147	2265	2028	2282	2337	3192	2587	1168	933	2193
MAX	3270	18200	42100	4910	3670	5120	4540	4960	4410	1740	2390	7920
MIN	689	1530	1490	1260	1300	1090	1520	2140	1720	708	583	1330
CFSM	3.45	14.1	19.1	6.04	5.41	6.09	6.23	8.51	6.90	3.12	2.49	5.85
IN.	3.98	15.69	21.98	6.96	5.63	7.02	6.95	9.82	7.70	3.59	2.87	6.53
AC-FT	79570	313700	439500	139300	112600	140300	139000	196300	153900	71850	57390	130500

CAL YR 1977 TOTAL 945452 MEAN 2590 MAX 42100 MIN 453 CFSM 6.91 IN 93.79 AC-FT 1875000
WTR YR 1978 TOTAL 995204 MEAN 2727 MAX 42100 MIN 583 CFSM 7.27 IN 98.72 AC-FT 1974000

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi (3.2 km) southwest of Fall City and 2.6 mi (4.2 km) upstream from mouth.

DRAINAGE AREA.--30.6 mi^2 (79.3 km^2).

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum), December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 250 ft (76 m), from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Records good. Some small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--17 years (water years 1946-50, 1965-72, 1975-78), 145 ft^3/s (4.106 m^3/s) 64.35 in/yr (1.634 mm/yr), 105,100 acre-ft/yr (130 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,420 ft^3/s (96.9 m^3/s) Feb. 9, 1951, gage height, 6.75 ft (2.060 m), from high-water mark in well, from rating curve extended above 1,700 ft^3/s (48.1 m^3/s) on basis of contracted- opening measurement of peak flow; minimum daily discharge, 4.4 ft^3/s (0.12 m^3/s) Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft^3/s (36.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 25	1900	1,450	41.1	4.26	1.298	Dec. 15	2100	*1,680	47.6	*4.47	1.362
Dec. 2	0700	1,350	38.2	4.17	1.271						

Minimum discharge, 12 ft^3/s (0.34 m^3/s) Aug. 10, gage height, 0.68 ft (0.207 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	230	371	58	105	97	103	131	49	23	15	79
2	45	291	944	55	292	84	103	111	44	22	15	74
3	41	190	550	102	275	76	103	145	40	21	15	54
4	37	153	350	251	210	78	167	180	37	22	14	47
5	33	121	248	254	177	73	182	153	35	22	14	59
6	32	117	408	230	202	67	147	127	32	21	14	64
7	40	247	354	212	177	110	120	108	30	20	13	54
8	36	190	245	354	200	122	103	94	30	19	13	45
9	46	173	192	266	200	96	91	85	45	20	13	61
10	38	216	505	224	167	87	82	84	39	25	13	69
11	34	193	749	180	143	85	99	113	34	29	14	67
12	32	206	707	157	122	127	79	106	33	24	21	56
13	47	214	763	137	105	143	72	143	44	20	21	47
14	40	329	848	127	94	180	71	177	50	19	17	42
15	34	312	856	111	97	161	71	192	51	18	46	52
16	36	271	784	99	88	139	116	175	43	32	32	68
17	33	208	408	88	81	123	122	161	37	35	25	86
18	31	175	278	79	94	108	157	137	34	26	21	72
19	30	142	215	73	100	96	207	113	31	24	25	59
20	29	117	170	70	87	84	269	97	29	21	22	50
21	29	100	143	135	77	76	212	84	28	19	20	54
22	28	90	123	127	71	70	272	77	27	18	21	177
23	36	99	108	103	81	79	282	77	26	17	21	538
24	57	173	97	93	78	97	202	68	25	16	28	294
25	183	777	94	91	105	187	155	63	27	16	30	171
26	159	746	84	159	133	159	133	62	26	20	31	119
27	107	424	74	131	105	127	172	74	23	26	25	94
28	81	340	70	113	105	129	248	74	22	19	21	78
29	114	424	74	102	---	116	202	67	22	17	20	66
30	195	301	72	91	---	118	159	60	26	16	19	62
31	136	---	64	91	---	122	---	54	---	15	28	---
TOTAL	1869	7569	10948	4363	3771	3416	4501	3392	1019	662	647	2858
MEAN	60.3	252	353	141	135	110	150	109	34.0	21.4	20.9	95.3
MAX	195	777	944	354	292	187	282	192	51	35	46	538
MIN	28	90	64	55	71	67	71	54	22	15	13	42
CFSM	1.97	8.24	11.5	4.61	4.41	3.60	4.90	3.56	1.11	.70	.68	3.11
IN.	2.27	9.20	13.31	5.30	4.58	4.15	5.47	4.12	1.24	.80	.79	3.47
AC-FT	3710	15010	21720	8650	7480	6780	8930	6730	2020	1310	1280	5670

CAL YR 1977 TOTAL 41297 MEAN 113 MAX 944 MIN 11 CFSM 3.69 IN 50.20 AC-FT 81910
WTR YR 1978 TOTAL 45015 MEAN 123 MAX 944 MIN 13 CFSM 4.02 IN 54.72 AC-FT 89290

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW¼NE¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi (4.7 km) upstream from confluence with South Fork, 7.4 mi (11.9 km) northeast of Carnation, and at mile 11.7 (18.8 km).

DRAINAGE AREA.--39.9 mi^2 (103.3 km^2).

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from river-profile map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--21 years (water years, 1953-63, 1969-78), 371 ft^3/s (10.51 m^3/s) 126.27 in/yr (3,207 mm/yr) 268,800 acre-ft/yr (331 hm^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft^3/s (271 m^3/s) Dec. 15, 1959, gage height, 13.15 ft (4.008 m), from rating curve extended above 2,800 ft^3/s (79.3 m^3/s): minimum, 38 ft^3/s (1.08 m^3/s) Sept. 13, 14, 1958, but may have been less sometime during period of no gage-height record in October 1952; minimum gage height, 3.37 ft (1.027 m) Oct. 25, 26, 27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft^3/s (85.0 m^3/s) and maximum (*) from high-water mark in well:

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 25	2000	3,840	109	9.70	2.957	Dec. 10	1900	3,550	101	9.44	2.877
Dec. 2	0600	*5,560	157	*11.03	3.362						

Minimum discharge, 75 ft^3/s (2.12 m^3/s) Aug. 9-11, gage height, 3.47 ft (1.058 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	1130	2320	241	223	195	261	228	216	130	88	567
2	159	747	2930	228	446	184	267	228	231	191	87	503
3	146	348	1110	355	646	176	270	255	239	162	85	266
4	136	265	705	1020	446	174	294	244	239	162	83	224
5	128	243	526	770	422	174	300	223	228	151	81	242
6	123	267	965	546	542	170	258	209	209	141	80	250
7	141	736	700	411	390	276	231	206	186	133	79	211
8	142	326	490	935	408	380	218	211	170	127	77	184
9	188	510	422	566	352	258	206	228	200	124	76	209
10	144	973	1780	422	303	216	211	244	174	149	75	431
11	128	511	1600	359	264	204	241	408	168	158	75	346
12	122	460	1220	358	241	200	209	306	172	142	93	261
13	210	402	1290	330	223	206	193	397	209	127	101	208
14	152	599	1200	315	214	202	189	502	200	120	91	180
15	131	508	940	300	211	195	184	518	330	114	680	281
16	139	459	715	276	200	200	197	494	261	138	642	226
17	127	361	570	258	193	214	218	397	204	172	270	394
18	118	293	498	241	221	221	285	321	189	138	181	290
19	113	255	436	228	294	221	306	309	170	124	348	227
20	109	228	397	231	264	206	333	309	164	115	213	201
21	106	212	369	327	258	206	306	294	160	110	166	244
22	104	204	345	309	250	228	330	250	149	106	147	890
23	129	200	321	252	312	300	339	226	141	104	136	1300
24	158	257	312	231	279	418	315	204	136	100	136	570
25	376	1590	309	241	244	795	330	191	141	97	148	364
26	379	1660	291	300	247	610	339	193	139	102	148	290
27	214	931	270	258	216	397	490	306	134	129	128	264
28	171	1090	255	244	211	401	376	383	138	107	118	235
29	219	1320	333	247	---	342	291	282	141	97	112	216
30	487	600	318	226	---	342	252	228	141	93	108	209
31	318	---	267	216	---	315	---	211	---	90	157	---
TOTAL	5499	17685	24204	11241	8520	8626	8239	9005	5579	3953	5009	10283
MEAN	177	590	781	363	304	278	275	290	186	128	162	343
MAX	487	1660	2930	1020	646	795	490	518	330	191	680	1300
MIN	104	200	255	216	193	170	184	191	134	90	75	180
CFSM	4.44	14.8	19.6	9.10	7.62	6.97	6.89	7.27	4.66	3.21	4.06	8.60
IN.	5.13	16.49	22.57	10.48	7.94	8.04	7.68	8.40	5.20	3.69	4.67	9.59
AC-FT	10910	35080	48010	22300	16900	17110	16340	17860	11070	7840	9940	20400

CAL YR 1977 TOTAL 118936 MEAN 326 MAX 2930 MIN 57 CFSM 8.17 IN 110.88 AC-FT 235900
WTR YR 1978 TOTAL 117843 MEAN 323 MAX 2930 MIN 75 CFSM 8.10 IN 109.87 AC-FT 233700

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE¼SW¼ sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Phelps Creek, 8.1 mi (13.0 km) south of Index, and mile 12.9 (20.8 km).

DRAINAGE AREA.--5.34 mi² (13.83 km²).

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,850 ft (564 m) from topographic map. Prior to Oct. 1, 1961, at datum 0.85 ft (0.259 m) higher.

REMARKS.--Records good except those for period of no gage-height record Aug. 15 to Sept. 30, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--13 years (water years 1961-63, 1969-78), 57.7 ft³/s (1.634 m³/s) 146.74 in/yr (3,727 mm/yr), 41,800 acre-ft/yr (51.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft³/s (53.2 m³/s) Nov. 19, 1962; maximum gage height, 7.13 ft (2.173 m), present datum, Dec. 14, 1959; minimum daily discharge, 2.3 ft³/s (0.065 m³/s) Aug. 28-30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 550 ft³/s (15.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1745	642	18.2	4.34	1.323	Dec. 1	2000	1,000	28.3	5.36	1.634
Nov. 25	1645	*1,020	28.9	*5.41	1.649	Dec. 10	1915	699	19.8	4.53	1.381

Minimum discharge, 3.5 ft³/s (0.099 m³/s) Aug. 8-10, gage height, 0.43 ft (0.131 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	385	380	14	18	21	53	43	58	24	5.9	120
2	20	161	582	14	53	18	47	46	68	49	5.6	90
3	16	60	203	79	119	16	44	52	76	40	5.2	45
4	14	38	93	218	78	15	46	44	78	47	4.9	33
5	11	30	61	131	78	15	45	37	72	37	4.5	35
6	11	92	125	78	108	15	38	36	59	30	4.2	36
7	18	144	97	53	75	47	33	37	48	25	4.0	32
8	19	53	57	134	69	61	30	42	40	23	3.7	40
9	27	199	44	77	49	39	28	55	60	21	3.5	32
10	18	252	356	54	36	30	32	68	45	22	3.7	80
11	14	109	320	39	29	27	44	105	41	25	4.2	45
12	13	94	226	35	24	25	33	69	42	22	14	35
13	27	78	260	30	21	24	29	99	54	19	15	27
14	18	182	244	30	19	21	26	116	53	16	12	23
15	14	108	150	28	18	22	25	103	88	15	150	33
16	15	78	89	25	15	22	29	101	69	25	120	30
17	13	49	62	21	15	24	33	88	49	35	30	90
18	11	35	49	19	21	30	43	68	47	25	20	50
19	9.6	26	39	17	35	30	46	74	40	19	35	24
20	8.9	20	32	19	37	25	53	82	38	16	20	20
21	8.3	18	27	47	40	25	50	76	36	14	16	30
22	8.0	17	25	45	43	32	51	58	32	12	14	180
23	16	16	22	30	70	75	50	45	27	11	13	280
24	39	22	22	25	58	120	49	36	25	9.9	16	70
25	105	407	24	28	41	214	62	31	29	8.6	25	40
26	76	284	21	33	33	141	76	34	27	11	20	30
27	39	152	18	26	27	95	115	90	25	15	14	26
28	26	207	17	23	24	101	89	99	30	9.9	11	23
29	36	228	21	23	---	83	63	75	36	8.3	10	22
30	141	76	20	20	---	83	51	53	30	7.3	10	20
31	69	---	15	18	---	72	---	48	---	6.5	25	---
TOTAL	885.8	3620	3701	1433	1253	1568	1413	2010	1422	648.5	639.4	1641
MEAN	28.6	121	119	46.2	44.8	50.6	47.1	64.8	47.4	20.9	20.6	54.7
MAX	141	407	582	218	119	214	115	116	88	49	150	280
MIN	8.0	16	15	14	15	15	25	31	25	6.5	3.5	20
CFSM	5.36	22.7	22.3	8.65	8.39	9.48	8.82	12.1	8.88	3.91	3.86	10.2
IN.	6.17	25.21	25.78	9.98	8.73	10.92	9.84	14.00	9.90	4.52	4.45	11.43
AC-FT	1760	7180	7340	2840	2490	3110	2800	3990	2820	1290	1270	3250

CAL YR 1977 TOTAL 18796.1 MEAN 51.5 MAX 582 MIN 2.4 CFSM 9.64 IN 130.91 AC-FT 37280
WTR YR 1978 TOTAL 20234.7 MEAN 55.4 MAX 582 MIN 3.5 CFSM 10.4 IN 140.93 AC-FT 40140

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'44", in SW¼SW¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi (0.2 km) upstream from private road bridge, 9.8 mi (15.8 km) northeast of Carnation, and at mile 6.8 (10.9 km).

DRAINAGE AREA.--19.7 mi^2 (51.0 km^2).

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (396 m), from river-profile map.

REMARKS.--Records good. Regulation by South Fork Tolt Reservoir, capacity, 57,830 acre-ft (71.3 hm^3) since Sept. 1963. During 1978 water year the Seattle Water Department diverted an average daily discharge of about 61 ft^3/s (1.73 m^3/s) above the station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft^3/s s(5.607 m^3/s), 143,300 acre-ft/yr (177 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft^3/s (184 m^3/s) Dec. 15, 1959, gage height, 7.45 ft (2.271 m), from rating curve extended above 2,700 ft^3/s (76.5 m^3/s); maximum gage height, 7.62 ft (2.323 m) Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft^3/s (0.24 m^3/s) Sept. 12, 1963, minimum gage height, 0.81 ft (0.247 m) Aug. 23-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,280 ft^3/s (36.2 m^3/s) Dec. 2, gage height, 4.86 ft (1.481 m), caused by regulation; minimum, 26 ft^3/s (0.736 m^3/s) Jan. 24, 25, Mar. 30, Apr. 7-10; minimum gage height, 1.87 ft (0.570 m) Oct. 5, 12, 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	58	460	57	27	49	27	40	54	34	36	51
2	46	53	864	57	39	33	29	40	52	39	36	48
3	46	68	884	65	39	33	29	40	52	36	35	44
4	46	84	520	84	33	32	31	40	52	37	35	44
5	46	84	292	162	34	32	31	39	52	36	36	46
6	46	88	260	360	58	32	29	39	52	36	36	49
7	46	94	344	364	150	35	27	38	52	35	36	50
8	46	88	230	192	260	35	26	38	41	35	36	49
9	46	89	360	68	360	33	26	39	35	35	36	50
10	46	116	570	63	221	33	26	40	33	35	36	56
11	46	165	676	157	84	33	28	52	33	43	36	52
12	46	167	820	356	82	33	27	44	37	36	37	51
13	47	167	664	245	82	37	27	45	41	37	36	50
14	46	172	628	106	78	37	27	48	40	37	37	50
15	46	193	530	105	72	34	27	48	41	37	47	60
16	46	247	385	87	58	32	28	49	41	40	42	54
17	46	284	221	58	39	32	29	46	39	40	40	56
18	46	324	155	56	35	32	28	43	39	38	39	54
19	46	332	440	54	37	32	29	48	38	38	41	52
20	46	336	730	54	36	32	30	54	38	37	39	52
21	46	344	688	46	35	32	30	54	38	36	39	55
22	46	348	652	30	34	32	31	55	38	36	38	90
23	46	352	652	27	35	34	32	54	37	36	38	391
24	48	360	670	26	35	34	29	54	37	36	39	371
25	54	376	272	28	36	46	34	54	38	36	39	229
26	52	356	101	36	37	39	41	52	37	38	39	143
27	49	356	99	29	35	32	47	55	36	38	38	238
28	48	348	82	27	35	28	44	56	34	37	38	404
29	52	404	66	27	---	27	42	55	34	36	38	400
30	54	445	60	27	---	27	41	54	35	36	38	387
31	50	---	58	27	---	28	---	54	---	36	43	---
TOTAL	1467	6898	13433	3080	2106	1040	932	1467	1226	1142	1179	3726
MEAN	47.3	230	433	99.4	75.2	33.5	31.1	47.3	40.9	36.8	38.0	124
MAX	54	445	884	364	360	49	47	56	54	43	47	404
MIN	46	53	58	26	27	27	26	38	33	34	35	44
AC-FT	2910	13680	26640	6110	4180	2060	1850	2910	2430	2270	2340	7390

CAL YR 1977 TOTAL 34650 MEAN 94.9 MAX 884 MIN 21 AC-FT 68730
WTR YR 1978 TOTAL 37696 MEAN 103 MAX 884 MIN 26 AC-FT 74770

12148500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'45", long 121°49'22", in SE¼NE¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft (152 m) downstream from the forks, 0.4 mi (0.6 km) upstream from Stossel Creek, 5.5 mi (8.8 km) northeast of Carnation, and at mile 8.7 (14.0 km).

DRAINAGE AREA.--81.4 mi² (210.8 km²).

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt." Chemical analyses July 1960 to September 1970.

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1945(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348 ft (106.1 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage and Oct. 31, 1928, to Jan. 3, 1932, water-stage recorder, at site 350 ft (107 m) upstream at datum 7.1 ft (2.16 m) higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft (0.500 m) higher.

REMARKS.--Records good. Some regulation by South Fork Reservoir, capacity, 57,830 acre-ft (71.3 hm³). During the current water year city of Seattle Water Department diverted an average daily discharge of about 60 ft³/s (1.70 m³/s) above station for municipal use.

AVERAGE DISCHARGE.--44 years (water years, 1929-31, 1938-78), 603 ft³/s (17.08 m³/s), 436,900 acre-ft/yr (539 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s (493 m³/s) Dec. 15, 1959, gage height, 13.04 ft (3.975 m), from rating curve extended above 7,600 ft³/s (215 m³/s) on basis of slope-area measurement at gage height, 12.92 ft (3.938 m); minimum, 53 ft³/s (1.50 m³/s) Sept. 22, 23, 1951, gage height, 3.84 ft (1.170 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,400 ft³/s (96.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	2000	4,470	127	9.11	2.777	Dec. 10	2100	4,830	137	9.29	2.832
Dec. 2	0700	*6,920	196	*10.23	3.118						

Minimum discharge, 119 ft³/s (3.37 m³/s) Aug. 9-11, gage height, 4.31 ft (1.314 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	1260	3070	388	356	322	388	360	325	191	138	656
2	243	816	4550	364	600	273	384	353	333	275	135	627
3	225	466	2380	485	830	261	396	384	338	252	133	369
4	213	417	1560	1210	646	255	420	376	337	234	130	315
5	204	433	1090	1090	605	261	440	349	325	222	128	338
6	197	485	1550	1130	752	252	384	322	305	206	126	355
7	212	940	1370	988	679	346	349	318	278	194	124	313
8	213	476	1010	1460	806	489	328	318	251	188	122	278
9	260	705	1020	892	854	353	312	332	279	185	120	305
10	213	1160	2610	712	690	302	308	349	248	216	119	560
11	198	779	2720	707	471	289	349	535	238	240	119	479
12	193	734	2480	918	440	299	305	428	245	206	140	377
13	288	679	2320	806	420	312	286	512	293	188	153	313
14	224	882	2300	570	400	308	280	646	287	178	140	278
15	202	799	1870	550	388	289	276	685	416	173	768	420
16	213	825	1610	507	356	292	305	679	354	208	746	346
17	200	750	1180	444	305	302	332	575	286	253	361	554
18	191	745	960	424	332	308	408	476	267	204	254	438
19	187	700	1040	404	408	315	449	449	245	186	432	354
20	183	665	1250	404	376	295	507	449	238	176	294	314
21	179	639	1220	498	356	283	462	436	230	168	238	361
22	177	622	1180	480	332	305	498	380	222	162	216	1050
23	201	620	1130	404	400	372	525	353	210	156	202	2000
24	232	681	1100	360	368	512	485	322	202	154	201	1160
25	471	2250	788	346	332	905	503	302	209	151	214	783
26	480	2400	525	458	346	794	498	302	206	157	221	606
27	304	1570	498	420	305	545	674	412	198	209	195	636
28	253	1680	462	392	308	540	560	516	199	162	177	750
29	314	2010	494	396	---	480	453	408	203	149	169	711
30	602	1270	467	380	---	462	400	342	205	144	163	704
31	433	---	412	353	---	449	---	321	---	140	221	---
TOTAL	7979	28458	46216	18940	13461	11770	12264	12989	7972	5927	6899	16750
MEAN	257	949	1491	611	481	380	409	419	266	191	223	558
MAX	602	2400	4550	1460	854	905	674	685	416	275	768	2000
MIN	177	417	412	346	305	252	276	302	198	140	119	278
AC-FT	15830	56450	91670	37570	26700	23350	24330	25760	15810	11760	13680	33220

CAL YR 1977 TOTAL 184532 MEAN 506 MAX 4550 MIN 104 AC-FT 366000
WTR YR 1978 TOTAL 189625 MEAN 520 MAX 4550 MIN 119 AC-FT 376100

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW¼SW¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft (12 m) downstream from highway bridge, 1.3 mi (2.1 km) northwest of Carnation, 1.9 mi (3.1 km) downstream from Tolt River, and at mile 23.0 (37.0 km).

DRAINAGE AREA.--603 mi² (1,562 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-33(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft (30 m) upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft (13.094 m) higher.

REMARKS.--Water-discharge reords good. During 1978 city of Seattle Water Department diverted an average daily discharge of 60 ft³/s (1.70 m³/s) above station for municipal use. Several small diversions for irrigation and domestic use above. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river above station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

AVERAGE DISCHARGE.--50 years, 3,812 ft³/s (108.0 m³/s), 85.85 in/yr (2,181 mm/yr), 2,762,000 acre-ft/yr (3,410 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft³/s (1,690 m³/s) Feb. 27, 1932, elevation, 59.88 ft (18.251 m), from graph based on gage readings; maximum elevation observed, 59.93 ft (18.267 m) Nov. 13, 1932; minimum discharge, 239 ft³/s (6.77 m³/s) Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily discharge, 396 ft³/s (11.2 m³/s) Sept. 24, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0900	18,100	513	52.23	15.920	Dec. 11	1900	21,700	615	53.50	16.307
Nov. 26	1500	25,600	725	55.01	16.767	Dec. 14	1400	21,500	609	53.45	16.292
Dec. 2	2000	*47,600	1,350	*58.80	17.922						

Minimum discharge, 559 ft³/s (15.8 m³/s) Aug. 9, 10, elevation, 44.04 ft (13.423 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1930	6690	9640	2080	2180	2180	3580	3550	3310	2060	836	2540
2	1710	15000	35200	1930	3070	1960	3090	3260	3800	2050	810	4030
3	1550	6280	33100	2120	4610	1810	2940	3510	4450	2000	798	2450
4	1430	4130	18000	5460	4710	1760	2810	3740	5040	1870	798	1960
5	1330	3240	9780	6830	4250	1710	3090	3440	5310	1800	786	1960
6	1230	2900	9780	6720	5550	1640	2770	3040	4910	1710	750	2170
7	1370	6380	11400	4960	4800	1880	2410	2960	3890	1670	702	2150
8	1420	4520	7860	7590	4820	3710	2200	3040	3310	1690	678	1850
9	1660	3890	6390	7280	4390	2850	2040	3350	3490	1660	666	1900
10	1600	8270	9200	5730	3740	2410	1970	3740	3820	1570	642	2510
11	1370	7180	20400	4780	3010	2200	2560	4490	3020	1630	678	3050
12	1300	5770	20500	4490	2670	2300	2380	4850	2770	1560	762	2610
13	1420	5200	16800	4150	2410	2230	2080	4510	3020	1450	888	2110
14	1540	7360	20700	3530	2240	2690	1940	6390	3130	1430	798	1800
15	1320	7970	17800	3460	2180	2440	1880	6960	2850	1380	2080	1850
16	1300	6260	14200	3170	2030	2270	2120	6340	2770	1460	3290	2360
17	1270	4960	9750	2880	1850	2240	2330	5860	2510	1870	2610	2690
18	1190	4140	7690	2620	1850	2420	2520	4960	2590	1600	1670	3070
19	1130	3490	6560	2440	2290	2480	2920	4670	2620	1430	1780	2390
20	1040	2990	6060	2300	2320	2420	3530	5290	2540	1350	1710	2080
21	1100	2600	5350	2620	2300	2360	3320	5810	2540	1220	1380	1970
22	1030	2420	4870	3200	2320	2670	3490	4650	2380	1240	1220	3300
23	1070	2330	4430	2720	2470	3240	3770	3890	2240	1210	1210	10900
24	1360	2600	4110	2390	2890	4740	3380	3170	2060	1170	1170	8490
25	2940	7040	3670	2230	2570	6450	3290	2750	2060	1100	1350	5210
26	3620	22700	3010	2970	2690	7260	3830	2670	2180	1060	1340	3710
27	2690	13300	2730	2910	2350	5170	5580	3010	2050	1250	1150	3030
28	2020	11900	2530	2590	2240	4760	6280	4870	2200	1130	1000	2910
29	2080	13600	2510	2500	---	4660	5090	4410	2360	992	914	2610
30	3940	9730	2570	2350	---	4270	4150	3560	2320	914	875	2400
31	4140	---	2320	2200	---	4430	---	3090	---	875	914	---
TOTAL	54100	204840	328910	113200	84800	95610	93340	129830	91540	45401	36255	92060
MEAN	1745	6828	10610	3652	3029	3084	3111	4188	3051	1465	1170	3069
MAX	4140	22700	35200	7590	5550	7260	6280	6960	5310	2060	3290	10900
MIN	1030	2330	2320	1930	1850	1640	1880	2670	2050	875	642	1800
CFSM	2.89	11.3	17.6	6.06	5.02	5.11	5.16	6.95	5.06	2.43	1.94	5.09
IN.	3.34	12.64	20.29	6.98	5.23	5.90	5.76	8.01	5.65	2.80	2.24	5.68
AC-FT	107300	406300	652400	224500	168200	189600	185100	257500	181600	90050	71910	182600

CAL YR 1977 TOTAL 1296788 MEAN 3553 MAX 35200 MIN 594 CFSM 5.89 IN 80.00 AC-FT 2572000
WTR YR 1978 TOTAL 1369886 MEAN 3753 MAX 35200 MIN 642 CFSM 6.22 IN 84.51 AC-FT 2717000

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At highway bridge 40 ft (12 m) upstream from gaging station.

PERIOD OF RECORD.--Water years 1965-71, 1973-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
03...	1230	1540	51	6.9	10.2	15	1
NOV							
28...	1245	12500	26	6.8	6.5	65	20
DEC							
19...	1300	6280	38	6.9	5.6	30	13
JAN , 1978							
16...	1250	3130	48	7.1	6.4	20	2
FEB							
21...	1225	2280	52	7.6	8.1	50	2
MAR							
06...	1220	1590	56	7.2	6.7	15	1
APR							
03...	1215	2980	43	7.0	8.0	15	3
MAY							
01...	1210	3550	43	7.1	9.5	--	3
JUN							
19...	1135	2650	36	7.1	14.1	15	4
JUL							
17...	1150	1880	43	6.5	14.4	10	2
AUG							
07...	1240	702	54	7.4	20.4	5	2
SEP							
18...	1500	2930	36	7.2	10.6	35	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
03...	11.7	.19	.07	.01	.00	.00
NOV						
28...	13.5	.26	.12	.05	.00	.00
DEC						
19...	12.6	.42	.07	.03	.00	.00
JAN , 1978						
16...	11.8	.31	.03	.01	.01	.03
FEB						
21...	12.4	.26	.09	.02	.00	.00
MAR						
06...	12.1	.37	.05	.01	.00	.00
APR						
03...	11.7	.20	.04	.01	.00	.00
MAY						
01...	11.0	.17	.03	.01	.00	.00
JUN						
19...	10.7	.08	.04	.01	.00	.00
JUL						
17...	10.9	.14	.02	.01	.00	.00
AUG						
07...	10.4	.15	.04	.01	.00	.00
SEP						
18...	11.0	.22	.07	.02	.00	.00

12150800 SNOHOMISH RIVER NEAR MONROE, WA

LOCATION.--Lat 47°49'52", long 122°02'50", in NE¼NW¼ sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft (46 m) upstream from State Highway 522 bridge, 0.1 mi (0.2 km) downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi (5.8 km) southwest of Monroe, and 6 mi (9.7 km) south of Snohomish.

DRAINAGE AREA.--1,537 mi² (3,981 km²).

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in district office. Sediment records December 1974 to January 1976.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft (4.039 m) National Geodetic Vertical Datum of 1929. Prior to February 1963 crest-stage gage only at site about 800 ft (244 m) downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft (30 m) upstream both National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation by powerplant above station at Snoqualmie Falls, 40 mi (64 km) upstream and by Spada Lake, 30 mi (48 km) upstream. Minor diversions for irrigation returned to river above gage. During 1978 water year city of Seattle Water Department diverted an average daily discharge of about 61 ft³/s (1.73 m³/s) above station for municipal use and the city of Everett diverted an average daily discharge of 123 ft³/s (3.48 m³/s) above the station for municipal use.

AVERAGE DISCHARGE.--15 years, 10,120 ft³/s (286.6 m³/s), 89.41 in/yr (2,271 mm/yr), 7,332,000 acre-ft/yr (9,040 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum stage, 35.8 ft (10.91 m) Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge during period February 1963 to September 1978, 115,000 ft³/s (3,260 m³/s) Dec. 4, 1975, gage height, 22.92 ft (6.986 m); minimum, 1,140 ft³/s (32.3 m³/s) Sept. 29, 1967, Sept. 17, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft³/s (5,100 m³/s). Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 33,000 ft³/s (935 m³/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft³/s)	(m³/s)	(ft)	(m)			(ft³/s)	(m³/s)	(ft)	(m)
Nov. 2	0600	54,800	1,550	14.56	4.438	Dec. 3	0200	*83,200	2,360	*19.74	6.017
Nov. 26	1200	62,600	1,770	16.11	4.910	Dec. 11	1100	50,700	1,440	13.74	4.188

Minimum, 1,940 ft³/s (54.9 m³/s) Aug. 11, gage height, 1.38 ft (0.421 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4920	15900	25500	5150	5270	5590	11000	9350	9250	6940	2490	4520
2	4370	45300	70500	4800	6390	5120	9520	8630	11100	7240	2410	10100
3	3930	22700	77700	5120	9580	4750	8860	8980	13200	7030	2360	7640
4	3640	13500	54200	9970	10900	4530	8200	8880	15200	6220	2370	5650
5	3410	10900	31400	15300	9530	4390	8530	8300	16500	5820	2330	5140
6	3180	9330	24300	14400	11600	4230	8030	7460	15700	5430	2230	5430
7	3600	13300	25600	11100	11400	4710	7200	7180	13000	5470	2120	5660
8	3880	11900	19800	14400	11100	7970	6600	7530	11000	5590	2060	4890
9	4470	9630	15300	16400	10200	7420	6130	8380	11100	5410	2020	4840
10	4510	18100	17300	12700	9030	6430	5860	9270	11400	5010	1970	6430
11	3850	18900	47900	10800	7580	5830	6770	10400	9590	4910	1970	8030
12	3520	15100	46000	9620	6710	5690	6870	11100	8840	4540	2110	7040
13	4150	13200	38800	9000	6020	5490	6160	10600	9280	4250	2390	5740
14	4280	16500	45800	7990	5540	6050	5750	14500	9300	4250	2220	4850
15	3710	20700	40900	7590	5410	5720	5520	16100	8860	4120	3890	4670
16	3440	17300	35500	7230	5100	5350	5920	14900	8440	4200	7450	5530
17	3340	14500	26000	6740	4750	5290	6850	13600	7490	4820	6460	5860
18	3150	11500	19900	6180	4630	5630	6890	12100	7880	4500	4460	6620
19	2990	9070	15800	5750	5210	5960	7570	11800	8320	4010	4390	5600
20	2860	7770	13200	5440	5300	6070	8720	13600	8210	3770	4490	4880
21	2720	6790	11400	6010	5390	5980	8500	15400	8290	3630	3640	4650
22	2680	6150	10200	7580	5570	6680	8540	13500	8000	3550	3240	8220
23	2720	5820	9270	6850	6190	8220	9140	11000	7410	3470	3050	25700
24	3330	5980	8480	5940	7600	12200	8400	9100	6820	3380	2910	21700
25	6270	12200	7970	5530	6890	15700	8030	7850	6380	3230	3280	13400
26	8140	56000	7070	6670	6710	20600	9110	7380	6260	3080	3550	9670
27	6990	37700	6510	6810	6050	16300	13400	7860	6290	3520	3190	7800
28	5430	34200	6050	6080	5800	15000	15500	11900	7010	3300	2830	7030
29	5190	40800	6100	5860	---	14500	12700	11400	7960	2980	2610	6390
30	8260	30700	6270	5530	---	13100	10700	9510	7810	2770	2470	5690
31	11200	---	5650	5230	---	13000	---	8520	---	2610	2570	---
TOTAL	138130	551440	776370	253770	201450	253500	250970	326080	285890	139050	95530	229370
MEAN	4456	18380	25040	8186	7195	8177	8366	10520	9530	4485	3082	7646
MAX	11200	56000	77700	16400	11600	20600	15500	16100	16500	7240	7450	25700
MIN	2680	5820	5650	4800	4630	4230	5520	7180	6260	2610	1970	4520
CFSM	2.90	12.0	16.3	5.33	4.68	5.32	5.44	6.85	6.20	2.92	2.01	4.98
IN.	3.34	13.35	18.79	6.14	4.88	6.14	6.07	7.89	6.92	3.37	2.31	5.55
AC-FT	274000	1094000	1540000	503400	399600	502800	497800	646800	567100	275800	189500	455000

CAL YR 1977 TOTAL 3337100 MEAN 9143 MAX 77700 MIN 1450 CFSM 5.95 IN 80.77 AC-FT 6619000
WTR YR 1978 TOTAL 3501550 MEAN 9593 MAX 77700 MIN 1970 CFSM 6.24 IN 84.75 AC-FT 6945000

12155400 PILCHUCK RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, at U.S. Highway 2 bridge on east side of Snohomish, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--132 mi^2 (342 km^2).

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)
OCT , 1977							
03...	1430	--	314	75	6.7	11.2	35
NOV							
28...	1430	--	2100	36	6.9	6.8	65
DEC							
19...	1500	--	1000	64	6.8	6.1	50
JAN , 1978							
16...	1540	--	448	69	7.1	7.0	40
FEB							
21...	1425	--	390	65	7.5	9.4	60
MAR							
06...	1445	270	--	75	7.4	8.0	30
APR							
03...	1445	--	470	56	7.1	10.9	40
MAY							
01...	1440	--	335	67	7.4	12.8	40
JUN							
19...	1400	--	155	62	8.2	18.1	30
JUL							
17...	1415	--	217	63	7.2	15.6	30
AUG							
07...	1435	--	75	95	7.6	22.4	0
SEP							
18...	1715	--	280	56	7.3	12.3	55

DATE	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977							
03...	3	11.9	.44	.06	.02	.00	.00
NOV							
28...	42	12.4	.31	.09	.11	.01	.03
DEC							
19...	7	12.2	1.1	.08	.03	.00	.00
JAN , 1978							
16...	2	11.6	.96	.05	.05	.01	.03
FEB							
21...	2	12.3	.69	.07	.01	.00	.00
MAR							
06...	1	12.7	.67	.03	.01	.00	.00
APR							
03...	3	11.0	.48	.05	.02	.00	.00
MAY							
01...	2	10.6	.52	.04	.02	.00	.00
JUN							
19...	2	11.2	.22	.09	.02	.00	.00
JUL							
17...	2	11.2	.26	.03	.02	.01	.03
AUG							
07...	2	10.9	.26	.09	.02	.00	.00
SEP							
18...	2	10.7	.25	.06	.02	.00	.00

12155500 SNOHOMISH RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'38", long 122°05'52", in NE¼SE¼ sec.13, T.28 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, at former gaging station at old State Highway 9 bridge in Snohomish and at mile 12.7 (20.4 km).

DRAINAGE AREA.--1,714 mi² (4,439 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1961.
pH: July 1959 to September 1961.
WATER TEMPERATURES: July 1959 to September 1961.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)
OCT , 1977							
03...	1450	4140	51	6.9	11.5	15	2
NOV							
28...	1445	36300	33	6.8	6.8	40	31
DEC							
19...	1515	16800	50	6.6	5.5	40	13
JAN , 1978							
16...	1615	7680	49	7.0	6.2	20	4
FEB							
21...	1445	5780	50	7.3	8.3	28	3
MAR							
06...	1505	4500	69	7.2	6.4	15	1
APR							
03...	1510	9330	43	7.1	8.4	20	4
MAY							
01...	1500	9680	48	8.6	10.0	15	3
JUN							
19...	1425	8480	35	7.4	13.9	15	3
JUL							
17...	1430	5040	39	7.3	15.0	10	2
AUG							
07...	1450	2200	56	7.7	21.3	0	2
SEP							
18...	1730	6900	38	7.3	11.7	25	3

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1977						
03...	11.5	.24	.07	.02	.00	.00
NOV						
28...	12.9	.33	.12	.08	.01	.03
DEC						
19...	12.0	.56	.14	.05	.01	.03
JAN , 1978						
16...	11.9	.44	.04	.02	.01	.03
FEB						
21...	12.1	.34	.08	.02	.00	.00
MAR						
06...	12.4	.37	.06	.02	.00	.00
APR						
03...	11.5	.34	.07	.02	.01	.03
MAY						
01...	11.5	.18	.04	.01	.00	.00
JUN						
19...	10.1	.07	.05	.03	.00	.00
JUL						
17...	11.0	.10	.02	.01	.01	.03
AUG						
07...	10.8	.01	.05	.01	.00	.00
SEP						
18...	10.6	.18	.04	.02	.01	.03

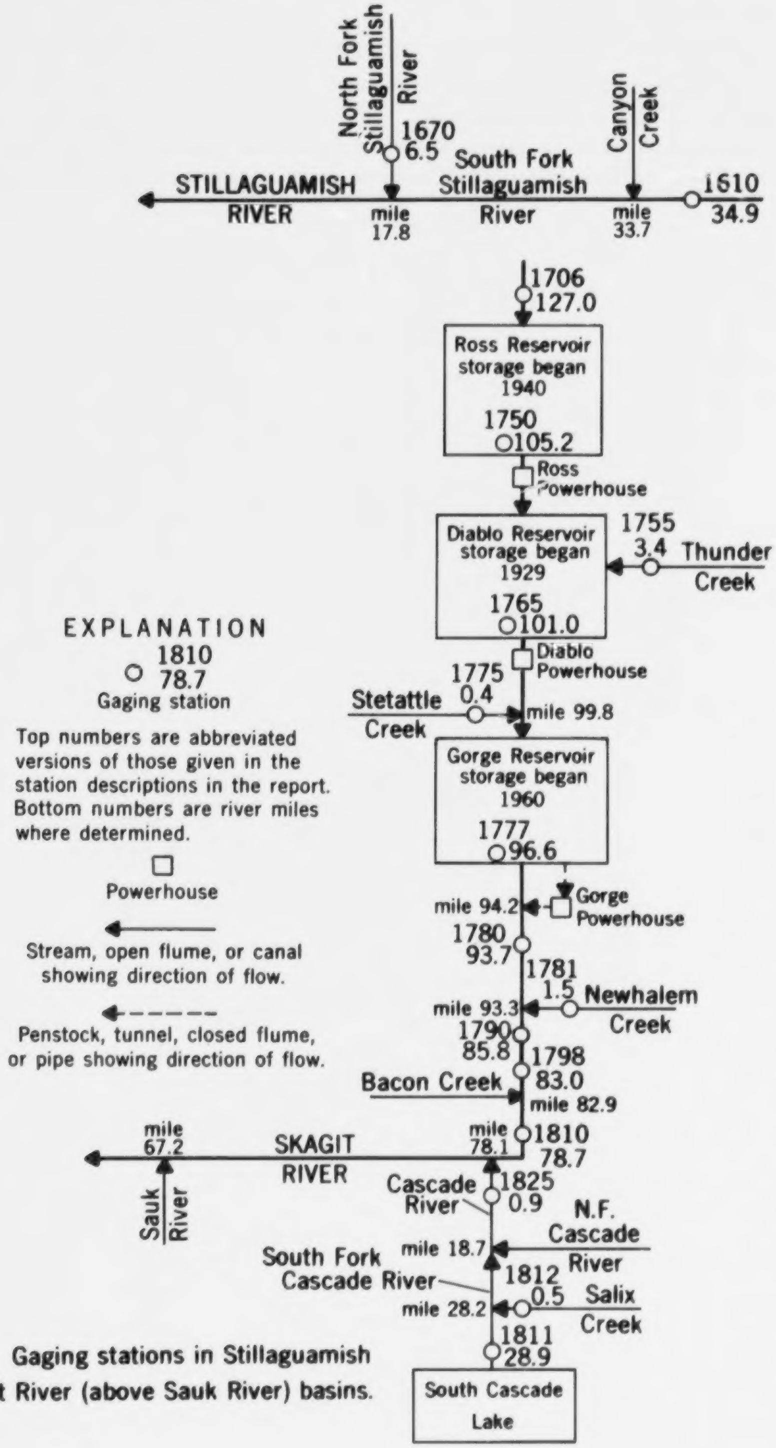

North Fork Stillaguamish River
1670
6.5
Canyon Creek
STILLAGUAMISH RIVER
mile 17.8
South Fork Stillaguamish River
mile 33.7
1610
34.9
1706
127.0
Ross Reservoir storage began 1940
1750
105.2
Ross Powerhouse
Diablo Reservoir storage began 1929
1765
101.0
1755
3.4
Thunder Creek
Diablo Powerhouse
1775
0.4
Stetattle Creek
mile 99.8
Gorge Reservoir storage began 1960
1777
96.6
mile 94.2
Gorge Powerhouse
1780
93.7
1781
1.5
mile 93.3
Newhalem Creek
1790
85.8
1798
83.0
Bacon Creek
mile 82.9
mile 78.1
1810
78.7
mile 67.2
SKAGIT RIVER
Sauk River
Cascade River
1825
0.9
N.F. Cascade River
mile 18.7
South Fork Cascade River
1812
0.5
Salix Creek
mile 28.2
1811
28.9
South Cascade Lake
EXPLANATION
1810
78.7
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 16. Gaging stations in Stillaguamish and Skagit River (above Sauk River) basins.

12161000 SOUTH FORK STILLAGUAMISH RIVER NEAR GRANITE FALLS, WA

LOCATION.--Lat 48°06'13", long 121°56'37", in SW¼NW¼ sec.8, T.30 N., R.7 E., Snohomish County, Hydrologic Unit 17110008, on right bank 0.3 mi (0.5 km) upstream from county road bridge, 1.2 mi (1.9 km) upstream from Canyon Creek, 1.6 mi (2.6 km) northeast of Granite Falls, and at mile 34.9 (56.2 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.-- December 1902 to July 1903 (gage heights only), July 1928 to current year. Published as "at Robe" 1902-3. Chemical analyses July 1959 to September 1966, October 1973 to September 1974.

REVISED RECORDS.--WSP 902: 1939. WSP 1286: 1929-31(M), 1932, 1935, 1937(M), 1939(P), 1940-41(M), 1943(P), 1947(P). WSP 1736: 1932-35(M), 1944(M), 1946-48(M), 1951(M), 1957(M). WSP 1932: 1938(P), 1945(P), 1950(P), 1956(P), 1959(P).

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from river-profile map. Prior to Aug. 31, 1928, nonrecording gage at site 8 mi (13 km) upstream at different datum. Aug. 31 to Sept. 30, 1928, nonrecording gage at present site and datum.

REMARKS.--Records good. Some small diversion for domestic use above station. No regulation.

AVERAGE DISCHARGE.--50 years, 1,080 ft³/s (30.59 m³/s) 123.25 in/yr (3,131 mm/yr) 782,500 acre-ft/yr (965 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,400 ft³/s (918 m³/s) Feb. 26, 1932, gage height, 19.7 ft (6.00 m), from graph based on gage readings, from rating curve extended above 21,000 ft³/s (595 m³/s); minimum, 55 ft³/s (1.56 m³/s) Sept. 23, 24, 1938; minimum gage height, 2.99 ft (0.911 m) Aug. 19-21, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,700 ft³/s (246 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2145	*18,800	532	*14.78	4.505
Nov. 25	2145	17,100	484	14.10	4.298
Dec. 2	0800	18,600	527	14.71	4.484
Dec. 10	2215	13,600	385	12.69	3.868

Minimum discharge, 136 ft³/s (3.85 m³/s) Aug. 10, gage height, 3.38 ft (1.030 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	551	7500	4820	505	640	510	876	648	719	421	174	2380
2	453	5630	12400	462	1420	457	850	609	822	499	168	2990
3	392	1770	3700	1180	2420	426	838	631	943	462	167	1170
4	348	1100	2120	3740	1380	408	808	615	1010	394	166	863
5	311	926	1420	2600	1200	412	856	550	1000	356	161	814
6	284	864	2590	1700	1660	412	772	480	902	328	151	800
7	614	1700	2180	1180	1250	927	642	455	745	331	141	675
8	530	945	1310	3090	1400	1480	576	495	598	353	139	564
9	775	1590	1020	1970	1110	888	520	576	760	340	140	628
10	548	3120	6340	1430	888	679	495	648	855	336	138	1510
11	433	1920	8920	1120	732	586	576	1700	739	401	154	1390
12	388	1750	4530	934	635	525	525	1500	684	320	281	982
13	840	1850	4200	842	565	557	480	1750	869	285	274	709
14	516	3520	6000	810	520	593	460	2400	776	287	206	570
15	410	1860	2950	810	535	539	442	2140	713	280	1300	762
16	380	1380	2270	744	490	530	495	1690	598	337	822	701
17	346	1060	1500	668	448	554	642	1260	514	428	503	876
18	308	824	1180	596	525	620	754	973	559	323	355	685
19	282	679	1000	545	635	620	736	954	543	277	1020	553
20	261	574	836	535	591	600	908	1040	534	262	619	474
21	246	485	750	920	602	580	882	1060	525	248	430	596
22	235	451	685	1050	629	620	1010	960	530	226	353	3520
23	376	429	630	780	888	740	928	802	463	210	306	4340
24	500	620	570	635	849	1750	766	637	403	200	308	1810
25	1210	5830	540	607	714	3640	730	555	380	190	584	1260
26	1230	7420	505	774	684	3180	814	589	371	260	526	960
27	763	3180	466	657	575	2070	1370	1010	384	341	374	740
28	569	4370	444	580	555	2280	1180	1230	455	242	302	660
29	970	4430	750	602	---	1550	895	909	530	205	265	600
30	2610	1850	774	535	---	1260	742	705	489	193	242	600
31	1770	---	596	515	---	1110	---	647	---	185	296	---
TOTAL	19449	69627	77996	33116	24540	31103	22568	30218	19413	9520	11065	35182
MEAN	627	2321	2516	1068	876	1003	752	975	647	307	357	1173
MAX	2610	7500	12400	3740	2420	3640	1370	2400	1010	499	1300	4340
MIN	235	429	444	462	448	408	442	455	371	185	138	474
CFSM	5.27	19.5	21.1	8.98	7.36	8.43	6.32	8.19	5.44	2.58	3.00	9.86
IN.	6.08	21.77	24.38	10.35	7.67	9.72	7.05	9.45	6.07	2.98	3.46	11.00
AC-FT	38580	138100	154700	65690	48680	61690	44760	59940	38510	18880	21950	69780

CAL YR 1977 TOTAL 393030 MEAN 1077 MAX 12400 MIN 142 CFSM 9.05 IN 122.86 AC-FT 779600
WTR YR 1978 TOTAL 383797 MEAN 1051 MAX 12400 MIN 138 CFSM 8.83 IN 119.98 AC-FT 761300

12164510 SOUTH FORK STILLAGUAMISH RIVER AT ARLINGTON, WA

LOCATION.--Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, at State Highway 530 bridge at northeast edge of Arlington.

DRAINAGE AREA.--255 mi² (660 km²).

PERIOD OF RECORD.--Water years 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	0850	860	60	7.3	7.3	15	3
NOV							
29...	0830	12300	29	6.6	6.0	130	170
DEC							
20...	0905	1750	52	7.0	2.8	30	13
JAN , 1978							
17...	0925	1220	51	7.2	4.8	25	5
FEB							
22...	0825	1170	50	7.4	6.0	45	4
MAR							
07...	0910	840	60	7.2	6.5	25	5
APR							
04...	0930	1370	46	7.4	7.6	40	6
MAY							
02...	0930	1060	52	7.0	9.5	20	5
JUN							
20...	0920	910	48	7.2	14.2	15	3
JUL							
18...	0820	590	50	7.4	13.9	35	2
AUG							
08...	0805	290	76	7.4	19.4	5	1
SEP							
19...	0930	970	45	7.6	9.5	25	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.9	.16	.05	.06	.03	.09
NOV						
29...	13.1	.18	.17	.41	.01	.03
DEC						
20...	13.6	.45	.07	.03	.01	.03
JAN , 1978						
17...	12.4	.31	.05	.03	.01	.03
FEB						
22...	12.5	.23	.11	.01	.00	.00
MAR						
07...	12.5	.27	.04	.02	.00	.00
APR						
04...	11.5	.20	.14	.02	.01	.03
MAY						
02...	11.2	.14	.06	.01	.00	.00
JUN						
20...	9.9	.09	.06	.01	.00	.00
JUL						
18...	10.5	.09	.05	.01	.00	.00
AUG						
08...	9.3	.09	.05	.01	.00	.00
SEP						
19...	10.8	.15	.05	.01	.00	.00

12166900 NORTH FORK STILLAGUAMISH RIVER AT CICERO, WA

LOCATION.--Lat 48°16'05", long 122°00'44", in NE¼NE¼ sec.15, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, at State Highway 530 bridge, 3.0 mi (4.8 km) upstream from gaging station (12167000), 6.7 mi (10.8 km) northeast of Arlington.

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--Water years 1961-71, 1974, 1977 to current year.

REMARKS.--Data prior to 1978 water year published as 12167000 North Fork Stillaguamish River near Arlington.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)
OCT , 1977							
04...	0915	--	576	80	7.4	7.5	5
NOV							
29...	0850	--	10200	33	6.7	6.0	130
DEC							
20...	0930	--	2220	64	7.1	3.1	25
JAN , 1978							
17...	0955	--	1700	49	7.2	4.9	20
FEB							
22...	0840	--	1290	60	7.5	6.0	40
MAR							
07...	0935	--	1990	73	7.3	6.3	50
APR							
04...	1000	--	1520	59	7.4	7.3	30
MAY							
02...	0950	--	1100	64	7.2	9.1	15
JUN							
20...	0950	--	978	60	7.3	12.1	15
JUL							
18...	0840	--	589	60	7.5	13.3	15
AUG							
08...	0830	310	--	89	7.5	17.8	0
SEP							
19...	1000	--	978	60	7.4	9.4	20

DATE	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977							
04...	2	12.2	.21	.06	.01	.01	.03
NOV							
29...	120	12.8	.29	.12	.35	.01	.03
DEC							
20...	13	13.2	.44	.07	.03	.01	.03
JAN , 1978							
17...	3	12.4	.29	.05	.03	.01	.03
FEB							
22...	6	12.6	.23	.09	.01	.00	.00
MAR							
07...	5	12.5	.27	.04	.02	.00	.00
APR							
04...	3	11.6	.26	.07	.02	.00	.00
MAY							
02...	3	11.6	.14	.02	.01	.00	.00
JUN							
20...	2	10.3	.12	.06	.02	.00	.00
JUL							
18...	2	11.5	.08	.04	.01	.00	.00
AUG							
08...	1	10.2	.09	.05	.02	.00	.00
SEP							
19...	1	10.9	.27	.04	.02	.01	.03

12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--Lat 48°15'42", long 122°02'47", in SE¼NW¼ sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi (9.2 km) northeast of Arlington, 7.8 mi (12.6 km) downstream from Deer Creek, and at mile 6.5 (10.5 km).

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--July 1928 to current year. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft (27.231 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No regulation. Small diversions for domestic use.

AVERAGE DISCHARGE.--50 years, 1,901 ft³/s (53.84 m³/s) 98.53 in/yr (2,503 mm/yr), 1,377,000 acre-ft/yr (1,700 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,600 ft³/s (867 m³/s) Feb. 9, 1951; maximum gage height, 13.46 ft (4.103 m) Feb. 10, 11, 1951; minimum discharge, 117 ft³/s (3.31 m³/s) Sept. 23, 1938; minimum gage height 0.97 ft (0.296 m) Sept. 10, 12, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s (368 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2400	18,600	527	10.61	3.234	Dec. 2	1100	*29,200	827	*12.83	3.911
Nov. 26	0400	27,000	765	12.39	3.776	Dec. 10	2400	21,600	612	11.30	3.444
Nov. 29	0500	14,600	413	9.59	2.923	Dec. 14	0300	13,400	379	9.29	2.832

Minimum discharge, 260 ft³/s (7.36 m³/s) Aug. 10, gage height, 2.30 ft (0.701 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	896	6970	9260	1180	1490	1050	1910	1150	1160	785	390	1840
2	752	8350	24000	1100	3070	1000	1780	1100	1220	994	370	4180
3	650	3300	9090	1640	3530	950	1690	1070	1320	994	365	1990
4	576	2240	5380	4370	2580	890	1560	1050	1370	827	355	1700
5	514	1940	3810	4010	2280	876	1510	1030	1380	778	340	1530
6	473	1780	4200	3010	2970	876	1460	946	1290	743	330	1430
7	685	3150	4520	2370	2330	1160	1340	914	1160	722	315	1210
8	715	1940	3150	6220	2400	1970	1260	935	1040	715	310	1090
9	976	2500	2620	4280	2070	1380	1180	994	2050	701	295	1240
10	671	5770	8100	3260	1780	1180	1110	1030	2880	694	290	2080
11	563	3840	15500	2680	1550	1120	1240	2230	1790	687	300	3760
12	514	3190	10500	2290	1390	1080	1180	3300	1490	652	410	1880
13	1160	4260	9870	2050	1270	1120	1080	3240	1640	617	570	1380
14	745	6520	9900	2000	1190	1210	1040	4280	1470	596	500	1140
15	595	3710	6820	2010	1220	1170	1030	3520	1290	582	1350	1270
16	538	2760	5460	1960	1120	1160	1100	2820	1150	596	1060	1170
17	490	2460	3750	1580	1050	1240	1240	2250	1050	652	694	1450
18	451	1910	2950	1550	1110	1310	1410	1830	1040	589	540	1160
19	430	1570	2630	1450	1300	1310	1430	1690	994	554	617	984
20	400	1310	2230	1400	1270	1220	1600	1710	954	533	596	878
21	380	1090	2000	2260	1270	1150	1580	1690	938	512	463	950
22	375	997	1830	2520	1280	1210	1720	1510	946	498	418	3890
23	550	951	1690	1950	1510	1460	1420	1360	890	491	379	4620
24	880	1040	1540	1660	1470	2380	1290	1180	827	477	393	2680
25	1820	8300	1440	1590	1280	5360	1270	1090	806	456	717	1850
26	2530	14700	1350	1700	1250	5360	1520	1160	792	449	762	1470
27	1390	5270	1250	1600	1130	4130	1810	1430	778	670	553	1270
28	1010	7210	1180	1480	1100	4700	1660	1790	806	510	469	1130
29	1710	9130	1680	1450	---	3340	1410	1490	834	460	408	1050
30	3780	4270	1650	1340	---	2620	1250	1240	827	430	377	1050
31	2590	---	1320	1300	---	2270	---	1130	---	410	376	---
TOTAL	29809	122428	160670	69260	47260	57252	42080	52154	36182	19374	15312	53322
MEAN	962	4081	5183	2234	1688	1847	1403	1682	1206	625	494	1777
MAX	3780	14700	24000	6220	3530	5360	1910	4280	2880	994	1350	4620
MIN	375	951	1180	1100	1050	876	1030	914	778	410	290	878
CFSM	3.67	15.6	19.8	8.53	6.44	7.05	5.36	6.42	4.60	2.39	1.89	6.78
IN.	4.23	17.38	22.81	9.83	6.71	8.13	5.97	7.41	5.14	2.75	2.17	7.57
AC-FT	59130	242800	318700	137400	93740	113600	83470	103400	71770	38430	30370	105800

CAL YR 1977 TOTAL 682600 MEAN 1870 MAX 24000 MIN 226 CFSM 7.14 IN 96.92 AC-FT 1354000
WTR YR 1978 TOTAL 705103 MEAN 1932 MAX 24000 MIN 290 CFSM 7.37 IN 100.11 AC-FT 1399000

12167700 STILLAGUAMISH RIVER NEAR SILVANA, WA

LOCATION.--Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, at south bound bridge on U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).

DRAINAGE AREA.--557 mi^2 (1,443 km^2).

PERIOD OF RECORD.--Water years 1959-71, 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	0820	1250	65	6.9	8.2	20	2
NOV							
29...	0810	24100	33	6.1	6.1	145	400
DEC							
20...	0840	4800	65	7.3	3.0	30	15
JAN , 1978							
17...	0850	3080	59	7.2	5.0	25	6
FEB							
22...	0800	2600	54	7.5	6.5	40	3
MAR							
07...	0840	1790	74	7.2	7.0	15	5
APR							
04...	0850	3000	57	7.1	7.8	35	9
MAY							
02...	0900	2110	63	6.8	10.3	20	3
JUN							
20...	0850	1740	58	7.1	15.0	20	3
JUL							
18...	0755	1160	53	7.1	14.2	25	2
AUG							
08...	0735	592	72	7.4	19.9	5	2
SEP							
19...	0850	1970	59	7.6	9.8	25	3

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.9	.20	.07	.01	.00	.00
NOV						
29...	12.8	.26	.18	.60	.01	.03
DEC						
20...	12.8	.55	.09	.04	.01	.03
JAN , 1978						
17...	12.0	.38	.05	.03	.01	.03
FEB						
22...	12.4	.29	.08	.02	.01	.03
MAR						
07...	--	.35	.04	.02	.01	.03
APR						
04...	11.3	.28	.08	.03	.00	.00
MAY						
02...	10.8	.18	.04	.01	.00	.00
JUN						
20...	9.1	.23	.06	.03	.01	.03
JUL						
18...	10.6	.11	.05	.02	.01	.03
AUG						
08...	9.1	.09	.05	.01	.01	.03
SEP						
19...	10.5	.25	.04	.01	.00	.00

12170600 SKAGIT RIVER AT INTERNATIONAL BOUNDARY, NEAR HOPE, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°00'01", long 121°04'15", on left bank at international boundary, approximately 31 mi (50 km) southeast of Hope, and at mile 127.0 (204.3 km).

DRAINAGE AREA.--381 mi^2 (987 km^2), of which 3 mi^2 (7.8 km^2) is in the United States.

PERIOD OF RECORD.--December 1953 to current year (gage heights or elevations only).

GAGE.--Water-stage recorder. Datum of gage is 1,583.44 ft (482.633 m) National Geodetic Vertical Datum of 1929; 1,582.53 ft (482.355 m) above Geodetic Survey of Canada 1959 datum; 1,584.07 ft (482.825 m) above city of Seattle 1936 datum; and 1,581.65 ft (482.087 m) above city of Seattle Ross Dam datum (by water level transfer in 1955). Prior to Apr. 15, 1955, nonrecording gage at present site and datum. Apr. 15, 1955 to Dec. 6, 1960, water-stage recorder at site 300 ft (91 m) upstream at present datum.

REMARKS.--No diversion above station. Stage subject to backwater from Ross Reservoir. Starting about July 1, 1967, the taintor gates at Ross Dam were extended to elevation, 1,602.50 ft (488.442 m) city of Seattle Ross Dam datum.

COOPERATION.--This station is maintained by Canada under agreement with the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 21.48 ft (6.547 m) July 31, 1978; minimum observed, 1.25 ft (0.381 m) Mar. 5, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 21.48 ft (6.547 m) July 31; minimum daily recorded, 4.28 ft (1.305 m) Feb. 19.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.32	5.29	7.17	6.16	4.30	4.59	6.36	6.25	6.48	19.73	21.44	19.23
2	5.29	5.88	7.50	---	4.29	4.57	6.20	6.26	6.83	19.62	21.20	19.76
3	5.26	6.02	8.15	---	4.30	4.54	6.11	6.31	7.29	19.58	21.10	20.28
4	5.21	5.94	8.54	---	4.32	4.53	6.08	6.24	7.76	19.37	21.06	20.70
5	5.18	5.89	8.62	---	4.31	4.51	5.97	6.14	8.13	19.34	21.02	20.78
6	5.16	5.86	8.67	---	4.31	4.49	5.86	6.04	8.30	19.51	21.01	20.80
7	5.15	5.84	8.67	---	4.35	4.58	5.76	5.99	8.26	20.01	21.01	20.78
8	5.13	5.84	8.42	---	4.39	4.75	5.69	6.03	8.27	20.46	20.97	20.53
9	5.13	5.82	8.01	---	4.40	4.78	5.64	6.15	8.34	20.77	21.01	20.41
10	5.10	5.83	7.78	---	4.42	4.76	5.62	6.35	8.52	20.75	21.08	20.50
11	5.06	5.90	8.10	---	4.42	4.73	5.73	6.38	8.69	20.75	21.02	20.55
12	5.03	6.01	8.42	---	4.41	4.73	5.77	6.31	8.75	20.74	21.01	20.36
13	5.01	6.11	8.66	---	4.38	4.73	5.73	6.30	8.95	20.85	21.14	20.11
14	4.98	6.29	8.89	---	4.38	4.74	5.67	6.35	9.52	20.86	21.16	19.84
15	4.95	6.39	9.42	---	4.35	4.73	5.61	6.36	10.08	20.91	21.07	19.57
16	4.93	6.42	9.60	---	4.34	4.75	5.58	6.30	10.55	21.04	21.03	19.39
17	4.90	6.43	9.61	---	4.33	4.82	5.56	6.26	11.12	21.14	20.93	19.23
18	4.88	6.38	9.37	---	4.31	4.92	5.49	6.24	11.97	20.81	20.74	19.10
19	4.85	6.35	8.99	---	4.28	5.03	5.46	6.38	12.81	20.69	20.49	18.88
20	4.81	6.31	8.79	---	4.31	5.09	5.46	6.72	13.08	20.53	20.29	18.81
21	4.79	6.22	8.75	---	4.32	5.07	5.47	7.14	13.26	20.66	20.20	18.83
22	4.77	6.07	8.71	---	4.36	5.12	5.46	7.24	13.76	20.87	20.04	18.83
23	4.77	5.94	8.59	---	4.43	5.25	5.43	7.02	14.53	20.84	19.83	19.26
24	4.88	5.88	8.30	---	4.54	5.50	5.40	6.78	15.40	20.86	19.52	19.62
25	5.30	5.95	8.15	---	4.58	5.74	5.39	6.57	16.27	20.89	19.24	19.95
26	5.47	6.51	8.01	---	4.61	6.03	5.48	6.42	17.14	20.74	19.11	20.17
27	5.38	6.95	7.67	---	4.61	6.18	5.80	6.34	17.95	20.85	19.21	20.28
28	5.30	7.03	7.26	4.47	4.60	6.40	6.11	6.37	18.76	20.85	19.12	20.11
29	5.26	7.17	6.91	4.42	---	6.48	6.27	6.36	19.21	20.90	18.99	19.73
30	5.25	7.20	6.65	4.39	---	6.52	6.29	6.29	19.45	21.16	19.01	19.29
31	5.24	---	6.39	4.34	---	6.51	---	6.29	---	21.45	19.09	---
TOTAL	157.74	185.72	256.77	---	122.95	159.17	172.45	198.18	349.43	637.53	633.14	595.68
MEAN	5.09	6.19	8.28	---	4.39	5.13	5.75	6.39	11.65	20.57	20.42	19.86
MAX	5.47	7.20	9.61	---	4.61	6.52	6.36	7.24	19.45	21.45	21.44	20.80
MIN	4.77	5.29	6.39	---	4.28	4.49	5.39	5.99	6.48	19.34	18.99	18.81

SKAGIT RIVER BASIN

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA

(International gaging station)

LOCATION.--Lat 48°43'58", long 121°04'02", in SE¼ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Ross Dam on Skagit River 1.0 mi (1.6 km) downstream from Ruby Creek, 9.1 mi (14.5 km) northeast of Newhalem, and at mile 105.2 (169.3 km).

DRAINAGE AREA.--999 mi² (2,587 km²), of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1945, published as Ruby Reservoir near Newhalem.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 0.00 ft (0.000 m), city of Seattle Ross Dam datum; 1.79 ft (0.546 m) National Geodetic Vertical Datum of 1929; and 0.88 ft (0.268 m) Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site just uplake from Ross Dam at same datum. Sept. 24, 1940, to June 28, 1943, water-stage recorder at present site and datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft (152 m) uplake from dam at present datum.

REMARKS.--Reservoir is formed by concrete arch dam completed to elevation 1,615 ft (492.3 m) in 1949, storage began Mar. 11, 1940. Starting about July 1, 1957, taintor gates were extended to elevation, 1,602.50 ft (488.44 m). Usable storage, 1,052,300 acre-ft (1,300 hm³) between elevations 1,475 ft (449.6 m), lower limit of operation, and 1,602.5 ft (488.44 m), top of taintor gates. Dead storage below elevation, 1,250 ft (381 m), 1,175 acre-ft (1.45 hm³). Water used for power and to supplement low flow of Skagit River through city of Seattle's Diablo and Gorge powerplants. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by city of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,441,900 acre-ft (1,780 hm³) Aug. 1, 1978, elevation, 1,603.10 ft (488.625 m); minimum observed since dam was completed in 1949, 51,760 acre-ft (63.8 hm³) Apr. 5, 1952, elevation, 1,348.50 ft (411.023 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,441,900 acre-ft; (1,780 hm³) Aug. 1, elevation, 1,603.10 ft (488.625 m); minimum, 668,008 acre-ft (824 hm³) Mar. 22, elevation, 1,523.57 ft (464.384 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by City of Seattle in 1943)

1,474	378,000	1,525	679,000	1,575	1,130,200
1,500	509,200	1,550	888,300	1,603	1,440,700

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1582.43	1581.28	1586.83	1583.88	1561.35	1538.94	1531.60	1539.88	1569.84	1601.27	1602.97	1601.02
2	1582.43	1582.12	1587.63	1583.04	1560.28	1537.79	1532.01	1540.73	1571.00	1601.22	1602.74	1601.68
3	1582.26	1582.49	1588.67	1582.16	1560.02	1536.67	1532.59	1541.49	1573.22	1601.06	1602.70	1602.15
4	1582.02	1582.77	1589.31	1581.48	1559.75	1535.98	1532.93	1542.26	1575.95	1600.98	1602.57	1602.42
5	1581.90	1583.03	1589.45	1580.82	1559.60	1535.42	1532.94	1542.90	1578.79	1600.93	1602.63	1602.41
6	1581.91	1583.13	1589.64	1579.80	1559.04	1534.11	1533.17	1543.64	1581.45	1601.46	1602.63	1602.42
7	1581.77	1583.24	1589.64	1579.34	1558.32	1532.80	1533.09	1544.27	1583.36	1601.89	1602.59	1602.28
8	1581.65	1583.26	1589.10	1579.07	1557.47	1532.24	1533.59	1545.12	1584.94	1602.36	1602.54	1602.02
9	1581.50	1583.33	1588.35	1578.40	1556.72	1531.46	1533.95	1546.04	1586.55	1602.38	1602.61	1602.06
10	1581.36	1583.65	1588.45	1577.68	1555.79	1530.31	1533.91	1547.07	1587.93	1602.40	1602.61	1602.16
11	1581.23	1583.92	1588.98	1577.03	1555.03	1529.49	1534.36	1548.03	1589.12	1602.41	1602.53	1602.18
12	1581.05	1584.14	1589.26	1576.34	1554.22	1528.72	1534.96	1548.89	1589.76	1602.35	1602.64	1601.89
13	1581.01	1584.43	1589.74	1575.68	1553.25	1527.38	1534.87	1549.66	1590.43	1602.48	1602.78	1601.59
14	1580.93	1584.84	1590.64	1575.24	1552.12	1526.25	1534.82	1550.61	1591.14	1602.46	1602.66	1601.31
15	1580.77	1585.15	1591.03	1574.89	1551.22	1525.69	1534.89	1551.53	1591.73	1602.58	1602.62	1601.09
16	1580.84	1585.42	1591.26	1574.15	1550.08	1525.06	1534.79	1552.31	1592.25	1602.76	1602.62	1600.94
17	1580.76	1585.55	1591.17	1573.43	1549.30	1524.49	1534.77	1553.21	1593.02	1602.78	1602.43	1600.87
18	1580.67	1585.58	1590.82	1572.78	1548.86	1524.21	1534.88	1554.04	1594.05	1602.40	1602.23	1600.67
19	1580.60	1585.65	1590.51	1572.21	1548.76	1524.33	1535.05	1555.05	1594.60	1602.22	1602.05	1600.45
20	1580.46	1585.53	1590.21	1571.76	1548.18	1523.86	1535.22	1556.82	1594.69	1602.20	1601.94	1600.46
21	1580.37	1585.11	1590.03	1570.90	1547.41	1523.75	1534.72	1559.05	1594.89	1602.39	1601.78	1600.36
22	1580.23	1584.63	1589.82	1570.46	1546.65	1523.60	1534.67	1560.90	1595.59	1602.54	1601.60	1600.62
23	1580.23	1584.31	1589.46	1569.27	1545.63	1523.63	1534.63	1562.34	1596.49	1602.42	1601.34	1601.03
24	1580.26	1584.39	1589.18	1568.44	1544.36	1523.68	1534.69	1563.48	1597.29	1602.54	1600.97	1601.41
25	1580.52	1584.95	1589.05	1567.34	1543.45	1524.82	1534.88	1564.37	1598.30	1602.43	1600.73	1601.72
26	1580.67	1585.98	1588.70	1566.34	1542.32	1526.28	1535.14	1565.02	1599.10	1602.37	1600.75	1601.88
27	1580.72	1586.48	1588.06	1565.34	1541.04	1527.74	1535.76	1565.87	1599.96	1602.47	1600.88	1601.87
28	1580.73	1586.65	1587.09	1564.53	1540.05	1528.79	1536.86	1566.81	1600.61	1602.51	1600.61	1601.59
29	1580.67	1586.84	1586.28	1564.08	---	1530.12	1537.99	1567.82	1600.95	1602.54	1600.58	1601.14
30	1580.70	1586.81	1585.35	1563.20	---	1530.77	1539.04	1568.30	1601.24	1602.93	1600.66	1600.74
31	1580.71	---	1584.57	1562.17	---	1531.46	---	1568.91	---	1603.07	1600.70	---
MEAN	1581.08	1584.49	1588.98	1573.59	1551.80	1529.03	1534.56	1553.76	1589.94	1602.22	1601.99	1601.48
MAX	1582.43	1586.84	1591.26	1583.88	1561.35	1538.94	1539.04	1568.91	1601.24	1603.07	1602.97	1602.42
MIN	1580.23	1581.28	1584.57	1562.17	1540.05	1523.60	1531.60	1539.88	1569.84	1600.93	1600.58	1600.36
†	1,190,326	1,256,410	1,231,913	1,001,449	801,348	729,951	792,760	1,067,800	1,419,832	1,441,540	1,413,490	1,413,958
‡	-19,066	+66,084	-24,497	-230,464	-200,101	-71,397	+62,809	+275,040	+352,032	+21,708	-28,050	+468

CAL YR 1977:........................ +157,254
WTR YR 1978:........................ +204,566

† Total contents, at end of month.
‡ Change in contents, in acre-feet.

12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22". long 121°04'18", in SE¼ sec.23, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from high-water line of Diablo Reservoir 9.0 mi (14.5 km) east of Newhalem, and at mile 3.4 (5.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.-- October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (371.9 m), from river-profile map.

REMARKS.--Records good.

AVERAGE DISCHARGE.--48 years, 618 ft³/s (17.50 m³/s) 79.93 in/yr (2,030 mm/yr), 447,700 acre-ft/yr (552 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Oct. 25, 1955, gage height, 12.68 ft (3.865 m), from rating curve extended above 3,500 ft³/s (99.1 m³/s); minimum not determined, probably less than 50 ft³/s (1.42 m³/s) during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 2,400 ft³/s (68.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 5	0100	*2,660	75.3	*7.29	2.222

Minimum discharge, 122 ft³/s (3.46 m³/s) Jan. 30, gage height, 2.35 ft (0.716 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	194	709	592	170	127	153	507	451	816	1620	1360	1660
2	182	813	1420	165	127	146	451	475	1170	1660	1500	1840
3	172	437	1170	17[illegible]	139	142	405	466	1670	1540	1670	1370
4	164	331	794	176	145	141	372	424	2150	1480	1770	1230
5	156	288	612	200	148	138	345	379	2380	1500	1450	956
6	150	259	545	188	164	133	315	355	2170	1590	1260	1010
7	148	264	478	174	168	141	295	376	1860	1800	1270	777
8	158	230	415	188	173	154	281	460	1640	1770	1440	650
9	162	226	388	188	174	154	270	588	1570	1480	1600	818
10	144	319	472	176	170	154	288	632	1210	1120	1310	1020
11	136	368	910	166	161	153	343	559	965	900	1110	803
12	170	333	796	158	153	150	324	500	945	880	1100	661
13	388	307	814	154	149	150	312	506	1000	1140	839	621
14	252	367	1120	150	145	147	292	548	866	1310	765	577
15	228	340	868	152	141	144	280	531	772	1270	320	719
16	277	315	672	150	137	144	272	478	668	1570	1130	576
17	214	285	556	148	132	144	259	474	700	1350	816	505
18	192	244	477	144	130	157	244	501	1000	1220	761	441
19	184	227	420	144	127	178	243	668	1010	1220	914	399
20	170	208	369	143	128	192	252	975	1070	1220	716	378
21	158	189	343	149	138	210	248	1220	1180	1380	693	459
22	148	175	318	155	149	257	243	985	1230	1630	683	630
23	228	165	294	150	170	331	234	728	1150	1740	631	784
24	280	160	268	148	182	394	232	616	1070	1640	747	821
25	345	684	250	145	179	544	242	528	965	1450	811	823
26	242	1450	235	143	174	664	345	478	930	1600	641	829
27	202	767	220	140	168	675	562	534	1210	1830	617	956
28	180	604	205	138	161	667	562	672	1820	1430	689	649
29	190	772	222	135	---	633	506	581	2180	1300	815	574
30	200	584	204	129	---	624	478	524	1900	1260	1060	631
31	186	---	184	129	---	571	---	592	---	1270	1230	---
TOTAL	6200	12420	16631	4865	4259	8585	10002	17804	39267	44170	32718	24167
MEAN	200	414	536	157	152	277	333	574	1309	1425	1055	806
MAX	388	1450	1420	200	182	675	562	1220	2380	1830	1770	1840
MIN	136	160	184	129	127	133	232	355	668	880	617	378
CFSM	1.91	3.94	5.11	1.50	1.45	2.64	3.17	5.47	12.5	13.6	10.0	7.68
IN.	2.20	4.40	5.89	1.72	1.51	3.04	3.54	6.31	13.91	15.65	11.59	8.56
AC-FT	12300	24640	32990	9650	8450	17030	19840	35310	77890	87610	64900	47940

CAL YR 1977 TOTAL 193417 MEAN 530 MAX 2140 MIN 98 CFSM 5.05 IN 68.52 AC-FT 383600
WTR YR 1978 TOTAL 221088 MEAN 606 MAX 2380 MIN 127 CFSM 5.77 IN 78.33 AC-FT 438500

SKAGIT RIVER BASIN

12177500 STETATTLE CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°43'20", long 121°08'58", in NE¼ sec.6, T.37 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on left bank 5.5 mi (8.8 km) northeast of Newhalem and at mile 0.4 (0.6 km).

DRAINAGE AREA.--22.0 mi² (57.0 km²).

PERIOD OF RECORD.--December 1913 to November 1915 (fragmentary), September 1933 to current year. Published as "near Marblemount" 1913-15.

REVISED RECORDS.--WSP 1316: 1935(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 906.53 ft (276.310 m) city of Seattle datum. Dec. 19, 1913, to Nov. 14, 1915, nonrecording gage at site about 0.3 mi (0.5 km) downstream at different datum. Sept. 7, 1933, to Aug. 26, 1937, water-stage recorder at site 750 ft (229 m) upstream at datum 1.69 ft (0.515 m) higher. Aug. 27, 1937, to Nov. 20, 1957, water-stage recorder at site 600 ft (183 m) upstream at present datum.

REMARKS.--Records fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--45 years (water years 1934-78), 185 ft³/s (5.239 m³/s), 114.20 in/yr (2,901 mm/yr), 134,000 acre-ft/yr (165 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,580 ft³/s (243 m³/s) Nov. 26, 1949, gage height, 9.70 ft (2.957 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; minimum, 9 ft³/s (0.255 m³/s) Nov. 9-11, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 970 ft³/s (27.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1800	*6,250	177	*6.5	1.981	Dec. 11	0800	1,010	28.6	3.47	1.058
Nov. 25	2000	1,660	47.0	4.03	1.228	Dec. 14	0100	1,460	41.3	3.88	1.183

Minimum discharge, 30 ft³/s (0.850 m³/s) Oct. 6, gage height, 0.78 ft (0.238 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	1160	262	40	38	68	221	171	375	360	195	530
2	42	608	780	40	37	61	174	204	500	418	204	554
3	38	254	668	44	96	55	147	192	608	350	208	250
4	35	149	345	77	113	51	130	157	700	340	211	179
5	32	115	218	69	119	49	122	130	636	330	168	171
6	31	102	211	69	149	46	107	124	518	340	152	174
7	35	119	211	68	140	64	100	152	494	390	152	132
8	52	86	162	77	132	98	98	218	429	370	168	124
9	50	78	132	74	122	95	96	286	548	290	174	149
10	42	321	266	67	104	95	130	278	345	232	152	274
11	41	326	896	57	91	89	182	201	274	182	137	188
12	66	246	684	54	80	85	142	176	286	192	185	135
13	95	214	652	50	71	80	124	243	299	274	122	113
14	55	278	1090	49	65	75	107	270	250	286	107	98
15	51	211	602	53	59	69	98	232	236	270	221	179
16	51	162	360	55	55	67	96	195	198	312	168	154
17	45	124	239	54	50	71	93	192	246	239	122	147
18	41	89	171	51	47	91	89	232	326	228	122	117
19	39	71	132	50	48	111	91	345	303	236	152	96
20	36	55	111	53	56	122	98	458	335	228	119	85
21	36	46	95	68	80	142	96	464	355	250	107	137
22	36	41	85	85	95	185	93	286	355	274	102	434
23	90	37	77	71	126	258	89	195	294	278	93	500
24	201	38	67	61	128	290	91	165	270	262	102	365
25	235	470	60	57	107	452	107	140	254	246	154	236
26	158	804	55	55	95	614	201	132	274	262	111	179
27	113	360	49	53	85	668	303	204	380	266	96	171
28	88	290	47	49	75	524	243	290	518	208	95	132
29	124	446	49	47	---	396	208	211	500	198	104	119
30	147	282	45	43	---	360	188	179	458	192	122	142
31	128	---	40	41	---	282	---	262	---	195	254	---
TOTAL	2279	7582	8861	1781	2463	5713	4064	6984	11564	8498	4579	6264
MEAN	73.5	253	286	57.5	88.0	184	135	225	385	274	148	209
MAX	235	1160	1090	85	149	668	303	464	700	418	254	554
MIN	31	37	40	40	37	46	89	124	198	182	93	85
CFSM	3.34	11.5	13.0	2.61	4.00	8.36	6.14	10.2	17.5	12.5	6.73	9.50
IN.	3.85	12.82	14.98	3.01	4.16	9.66	6.87	11.81	19.55	14.37	7.74	10.59
AC-FT	4520	15040	17580	3530	4890	11330	8060	13850	22940	16860	9080	12420

CAL YR 1977 TOTAL 57799 MEAN 158 MAX 1220 MIN 31 CFSM 7.18 IN 97.73 AC-FT 114600
WTR YR 1978 TOTAL 70632 MEAN 194 MAX 1160 MIN 31 CFSM 8.82 IN 119.43 AC-FT 140100

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW¼SE¼ sec. 21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from Newhalem Creek, 0.5 mi (0.8 km) downstream from city of Seattle powerplant at Newhalem, 10.8 mi (17.4 km) upstream from Bacon Creek, and at mile 93.7 (150.8 km).

DRAINAGE AREA.--1,175 mi² (3,043 km²), of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--October 1908 to May 1914 and October 1920 to current year in reports of Geological Survey. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31. Chemical analyses water years 1974, 1977.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft (122.38 m) National Geodetic Vetical Datum of 1929 (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi (0.8 km) upstream at datum 91 ft (127.7 m higher. Nov. 15, 1920 to June 4, 1923, nonrecording gage at site about 500 ft (152 m) upstream at same datum.

REMARKS.--Records excellent. Water is diverted 2.9 mi (4.7 km) above station and is returned to river at Seattle powerplant 0.5 mi (0.8 km) above station. Flow regulated for power at Gorge Dam since August 1924 and by Diablo, Ross, and Gorge Reservoirs (see sta 12175000, 12176500, and 12177700), having a combined total capacity of 1,533,000 acre-ft (1,890 hm³).

AVERAGE DISCHARGE.--70 years (water years 1909-78), 4,484 ft³/s (127 m³/s) 3,249,000 acre-ft/yr (4,010 hm³/yr), adjusted for storage in Diablo Reservoir since October 1929, Ross Reservoir since March 1940, and Gorge Reservoir since June 1960.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s (1,800 m³/s) Nov. 29, 1909, gage height, 22.0 ft (6.71 m) from floodmark, site and datum then in use; minimum, 54 ft³/s (1.53 m³/s) Nov. 1, 1943, gage height, 78.15 ft (23.820 m); minimum daily, 136 ft³/s (3.85 m³/s) Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft (6.25 m), discharge about 115,000 ft³/s (3,260 m³/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,700 ft³/s (331 m³/s) June 30, gage height, 86.70 ft (26.426 m); minimum, 984 ft³/s (27.9 m³/s) June 16, gage height, 80.72 ft (24.603 m); minimum daily, 1,270 ft³/s (36.0 m³/s) Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	3500	5240	6310	5860	6390	4840	1900	3470	8730	6610	3630
2	1410	2150	6750	6100	5430	6060	3470	1790	4520	10700	6220	3180
3	1410	1450	3630	6880	4350	6120	3160	1940	4420	10100	5090	1990
4	1410	1430	3820	5970	3040	4270	2500	2010	5040	9700	5410	2080
5	1440	1420	4810	5760	2370	3780	3700	1910	5170	8080	4510	4420
6	1420	1420	4560	6780	4230	6280	2910	1710	4430	6390	3670	4110
7	1420	1430	4700	5570	5670	6630	2430	1710	5830	6560	4420	4480
8	1430	1530	6270	4050	5160	6050	2330	1780	6130	5240	4270	4970
9	1430	1450	6810	4460	5730	5070	2310	2300	6590	7070	4130	3570
10	1420	1420	5200	5510	6110	6290	2300	2660	3800	7390	3870	2460
11	1420	1420	5270	5410	5230	6090	2420	1900	3480	4940	4500	3880
12	1430	1430	6320	4870	5610	4290	2920	1720	4510	4810	2350	4590
13	1420	1420	5840	4620	6020	6230	2730	2420	4530	5040	2140	4990
14	1410	1420	6490	4200	6330	6600	2880	2740	4340	6070	4390	4410
15	1410	1420	6650	3420	6120	5130	3080	2340	4140	5460	4070	3540
16	1410	1420	6870	5420	6130	4730	3370	2400	4320	6320	3640	3550
17	1410	1430	6350	5360	5620	3440	2880	1880	2110	6850	4380	2950
18	1410	1600	6480	4590	2540	2540	2700	1740	2240	7280	4290	3430
19	1420	1620	6150	3590	2730	2330	2860	1810	5480	6690	3660	3390
20	1410	2880	4970	4200	3880	3360	2610	2450	6970	5730	4440	2680
21	1410	4860	4400	5500	4430	3120	4140	2110	7600	4050	3800	1840
22	1420	3720	4180	4690	5160	3780	3950	2090	7300	5460	3610	3490
23	1420	3790	5140	6910	6550	3890	3180	2290	3940	6780	3970	2080
24	1430	1450	4070	5650	6850	3260	2260	1900	3080	5460	4020	1920
25	1440	2180	3240	6590	6970	2330	2020	1710	1660	6330	4400	2250
26	1410	3440	4410	6830	7020	2320	2600	2220	2450	5290	3090	2870
27	1410	2870	5920	6260	7020	3590	2950	1770	3610	5600	2350	3470
28	1440	4850	6320	5240	7020	3240	2980	1770	6190	5150	1270	5190
29	1420	4320	6690	4600	---	2550	2020	1940	9840	3460	1940	6080
30	1430	5480	6560	5970	---	4170	2010	3180	10900	1490	4710	5050
31	1410	---	6520	5380	---	4220	---	3490	---	3650	3490	---
TOTAL	43990	70220	170630	166690	149180	138150	86510	65580	148090	191870	122710	106540
MEAN	1419	2341	5504	5377	5328	4456	2884	2115	4936	6189	3958	3551
MAX	1440	5480	6870	6910	7020	6630	4840	3490	10900	10700	6610	6080
MIN	1410	1420	3240	3420	2370	2320	2010	1710	1660	1490	1270	1840
AC-FT	87250	139300	338400	330600	295900	274000	171600	130100	293700	380600	243400	211300
†	-17,653	+63,796	-21,977	-232,337	-202,275	-67,403	+58,863	+277,069	+353,987	+24,482	-30,472	+457
MEAN‡	1,132	3,414	5,145	1,598	1,686	3,359	3,874	6,621	10,888	6,587	3,462	3,560
AC-FT‡	69,597	203,096	316,423	98,263	93,625	206,597	230,463	407,169	647,687	405,082	212,928	211,757

CAL YR 1977: TOTAL 1,123,310 MEAN 3,078 MAX 15,300 MIN 1,400 AC-FT 2,228,000
DO.....: MEAN‡ 3,297 AC-FT‡ 2,387,209
WTR YR 1978: TOTAL 1,460,160 MEAN 4,000 MAX 10,900 MIN 1,270 AC-FT 2,896,000
DO.....: MEAN‡ 4,285 AC-FT‡ 3,102,537

† Change in contents, in acre-feet, Ross, Diablo and Gorge Reservoir.
‡ Adjusted for change in reservoir contents.

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE¼SE¼ sec.28, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi (1.9 km) south of Newhalem, 1.5 mi (2.4 km) downstream from East Fork, and at mile 1.5 (2.4 km).

DRAINAGE AREA.--27.9 mi² (72.3 km²).

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,080 ft (329.2 m), by barometer.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--17 years, 176 ft³/s (4.984 m³/s) 85.67 in/yr (2,176 mm/yr), 127,500 acre-ft/yr (157 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,600 ft³/s (159 m³/s) about Nov. 20, 1962, gage height, 7.28 ft (2.219 m) from floodmarks, from rating curve extended above 750 ft³/s (21.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 20 ft³/s (0.57 m³/s) Feb. 1, 1963, gage height, 1.07 ft (0.326 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s (21.2 m³/s) and maximum (*);

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	1900	1,980	56.1	5.44	1.658	Dec. 14	0200	958	27.1	4.43	1.350
Nov. 25	2000	*2,240	63.4	*5.63	1.716	June 4	2100	872	24.7	4.31	1.314
Dec. 2	1300	1,320	37.4	4.86	1.481						

Minimum discharge, 26 ft³/s (0.736 m³/s) Oct. 23, gage height, 1.30 ft (0.396 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	581	285	58	57	62	171	123	299	344	139	333
2	45	440	1050	55	52	58	145	134	444	396	143	365
3	42	200	657	56	70	56	126	122	595	328	147	224
4	39	133	344	66	97	55	114	108	690	306	143	198
5	37	111	231	90	123	55	105	97	696	295	123	200
6	35	100	190	87	141	53	95	95	560	316	104	208
7	38	105	161	85	123	69	89	117	471	368	101	152
8	54	87	130	175	118	89	83	155	416	352	105	140
9	52	83	115	167	114	79	79	210	444	279	108	165
10	44	192	210	141	108	73	89	180	324	222	104	245
11	41	220	498	123	97	71	101	163	264	169	96	186
12	54	180	388	109	85	68	91	159	273	171	129	143
13	96	155	440	106	76	66	86	246	306	237	92	125
14	55	190	696	100	70	62	81	234	243	270	82	110
15	49	161	420	98	64	59	77	188	210	240	179	147
16	50	133	282	96	58	60	78	165	177	348	154	149
17	45	109	210	92	56	62	74	145	205	246	105	157
18	41	92	167	86	55	69	71	167	295	215	93	140
19	40	80	137	84	56	79	72	258	285	217	141	120
20	38	72	120	82	59	83	76	368	313	215	104	110
21	37	66	108	84	67	90	75	396	348	228	89	155
22	35	62	101	88	75	114	74	255	340	246	82	310
23	46	60	94	83	95	177	71	185	267	240	75	335
24	82	60	87	79	94	207	70	147	231	220	80	285
25	100	764	84	77	84	352	88	121	222	195	128	240
26	91	893	80	76	77	388	147	111	243	202	95	185
27	72	340	72	76	70	412	210	163	360	212	81	180
28	62	288	68	76	66	372	167	258	476	163	77	150
29	79	453	75	71	---	302	141	185	462	153	79	140
30	95	270	78	65	---	273	126	151	408	147	90	160
31	84	---	66	61	---	222	---	190	---	141	142	---
TOTAL	1726	6680	7644	2792	2307	4237	3072	5596	10867	7681	3410	5757
MEAN	55.7	223	247	90.1	82.4	137	102	181	362	248	110	192
MAX	100	893	1050	175	141	412	210	396	696	396	179	365
MIN	35	60	66	55	52	53	70	95	177	141	75	110
CFSM	2.00	7.99	8.85	3.23	2.95	4.91	3.66	6.49	13.0	8.89	3.94	6.88
IN.	2.30	8.91	10.19	3.72	3.08	5.65	4.10	7.46	14.49	10.24	4.55	7.68
AC-FT	3420	13250	15160	5540	4580	8400	6090	11100	21550	15240	6760	11420

CAL YR 1977 TOTAL 49841 MEAN 137 MAX 1540 MIN 35 CFSM 4.91 IN 66.45 AC-FT 98860
WTR YR 1978 TOTAL 61769 MEAN 169 MAX 1050 MIN 35 CFSM 6.06 IN 82.36 AC-FT 122500

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'27", long 121°21'37", in SW¼NE¼ sec.15, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.6 mi (1.0 km) upstream from Alma Creek, 6.8 mi (10.9 km) northeast of Marblemount, and at mile 85.8 (138.1 km).

DRAINAGE AREA.--1,274 mi^2 (3,300 km^2), of which 400 mi^2 (1,036 km^2) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 358.8 ft (109.4 m) National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Water discharge records excellent. All diversions returned to river above gage. Flow regulated for powerplants on upper Skagit River by Ross, Diablo, and Gorge Reservoirs (see stations 12175000, 12176500, 12177700)

AVERAGE DISCHARGE.--28 years, 5,585 ft^3/s (158.2 m^3/s), 4,046,000 acre-ft/yr (4,989 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft^3/s (1,090 m^3/s) June 21, 1967, gage height, 17.36 ft (5.291 m); minimum, 990 ft^3/s (28.0 m^3/s) Dec. 29, 1957, gage height, 4.55 ft (1.387 m); minimum daily, 1,180 ft^3/s (33.4 m^3/s) Oct. 24, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft^3/s (445 m^3/s) Nov. 1, gage height, 11.32 ft (3.450 m); minimum, 1,500 ft^3/s (42.5 m^3/s) Sept. 21, gage height, 5.32 ft (1.622 m); minimum daily, 1,580 ft^3/s; (44.7 m^3/s) Oct. 4, 6, 7, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	5320	6350	6520	6090	6670	5550	2470	4520	9880	6980	5150
2	1610	4590	9750	6300	5690	6320	4130	2370	6090	12100	6820	5340
3	1600	2530	6410	7070	4970	6340	3910	2560	6340	11300	5790	3030
4	1580	2190	5200	6300	3520	4670	3040	2540	7170	10700	6020	2950
5	1610	2040	6100	6090	2860	3820	4090	2390	7510	9130	5130	4990
6	1580	1980	5390	7100	4740	6460	3470	2130	6360	7410	4140	4940
7	1580	2010	5460	5930	6190	6900	2830	2160	7310	7680	4960	5100
8	1640	2020	6720	4970	5740	6620	2710	2360	7520	6400	4740	5540
9	1640	1930	7360	5340	6190	5380	2670	3060	8450	7950	4670	4300
10	1610	2430	6210	6000	6580	6560	2670	3450	5070	8210	4280	3570
11	1590	2540	7340	6020	5630	6390	2820	2650	4480	5690	4960	4740
12	1640	2380	8110	5400	5940	4720	3400	2380	5360	5540	3060	5140
13	1800	2300	7790	5090	6370	6360	3140	3220	5580	5790	2500	5460
14	1650	2480	10000	4750	6540	6870	3150	3830	5190	6970	4670	4980
15	1630	2310	8740	3890	6500	5490	3430	3290	4960	6190	4770	4160
16	1630	2220	8430	5840	6310	5030	3790	3210	5040	7270	4310	4210
17	1620	2110	7390	5800	6010	3810	3150	2610	2930	7640	4820	3500
18	1600	2180	7320	5100	2910	2840	3140	2490	3250	7970	4800	4090
19	1600	2110	6920	3980	3020	2680	3070	2840	6100	7450	4240	3810
20	1590	2970	5820	4620	3990	3710	2980	3830	7890	6480	4870	3090
21	1590	5300	5010	5790	4820	3460	4430	3630	8570	5020	4240	2380
22	1580	4120	4670	5190	5320	4330	4320	3080	8370	6180	3930	4520
23	1710	4160	5410	7260	6930	4530	3550	3050	5180	7650	4240	3780
24	1970	1980	4640	6070	7270	4280	2640	2580	3910	6280	4420	2930
25	2260	3710	3660	6920	7340	3740	2370	2250	2490	7020	5030	3070
26	2010	6780	4590	7150	7350	3930	3060	2670	3220	6150	3710	3530
27	1870	4250	6110	6670	7320	5330	3740	2470	4650	6380	2810	3910
28	1830	6050	6550	5570	7290	4830	3800	2680	7490	5850	1610	5660
29	1890	6060	6970	4990	---	3960	2690	2660	11200	4270	2200	6430
30	2010	6510	6820	6180	---	5200	2610	3710	12200	2130	4940	5630
31	1940	---	6750	5610	---	5340	---	4270	---	4120	4190	---
TOTAL	53080	99560	203990	179510	159430	156570	100350	88890	184400	218800	137850	129930
MEAN	1712	3319	6580	5791	5694	5051	3345	2867	6147	7058	4447	4331
MAX	2260	6780	10000	7260	7350	6900	5550	4270	12200	12100	6980	6430
MIN	1580	1930	3660	3890	2860	2680	2370	2130	2490	2130	1610	2380
AC-FT	105300	197500	404600	356100	316200	310600	199000	176300	365800	434000	273400	257700

CAL YR 1977 TOTAL 1375800 MEAN 3769 MAX 14400 MIN 1580 AC-FT 2729000
WTR YR 1978 TOTAL 1712360 MEAN 4691 MAX 12200 MIN 1580 AC-FT 3396000

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: January 1953 to September 1973, September 1974 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Interruptions in the record due to malfunction of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 15.0°C Aug. 3-5, 9, 12, 13, 20, 1977; minimum, 1.0°C Jan. 26, 27, 29-31, Feb. 1-3, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 13.0°C July 30; minimum, 2.5°C Feb. 2.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	9.5	10.0	8.0	6.5	7.5	6.0	5.5	6.0	4.0	4.0	4.0
2	11.0	9.5	10.0	7.0	6.0	6.5	5.5	5.5	5.5	4.0	3.5	4.0
3	---	9.0	---	6.5	6.0	6.5	5.5	5.5	5.5	4.0	3.5	3.5
4	---	---	---	7.0	6.5	6.5	5.5	5.0	5.5	3.5	3.5	3.5
5	---	---	---	7.0	7.0	7.0	5.5	5.0	5.0	3.5	3.5	3.5
6	---	---	---	7.0	7.0	7.0	5.0	4.5	5.0	4.0	3.5	3.5
7	---	---	---	7.0	7.0	7.0	5.0	5.0	5.0	4.0	4.0	4.0
8	---	---	---	7.0	6.5	7.0	5.0	5.0	5.0	4.0	3.5	3.5
9	---	---	---	7.0	6.0	6.5	5.0	5.0	5.0	4.0	3.5	4.0
10	---	---	---	6.5	6.5	6.5	5.0	4.5	5.0	4.0	4.0	4.0
11	---	---	---	7.0	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
12	---	---	---	7.0	6.5	7.0	5.0	4.5	5.0	4.0	4.0	4.0
13	---	---	---	7.0	6.5	7.0	5.0	5.0	5.0	4.0	4.0	4.0
14	---	---	---	6.5	6.0	6.5	5.0	4.5	5.0	4.5	4.0	4.0
15	---	---	---	6.5	6.5	6.5	5.0	5.0	5.0	4.5	4.0	4.0
16	---	---	---	6.5	6.0	6.0	5.0	5.0	5.0	4.0	4.0	4.0
17	---	---	---	6.5	6.0	6.0	5.0	5.0	5.0	4.0	4.0	4.0
18	---	---	---	6.0	5.0	5.5	5.0	5.0	5.0	4.0	4.0	4.0
19	---	---	---	5.5	5.0	5.5	5.0	5.0	5.0	4.5	4.0	4.0
20	10.0	---	---	5.5	5.0	5.0	5.0	5.0	5.0	4.5	4.0	4.0
21	9.5	9.0	9.0	5.5	5.0	5.5	5.0	5.0	5.0	4.0	4.0	4.0
22	9.5	9.0	9.0	5.5	4.5	5.5	5.0	5.0	5.0	4.0	4.0	4.0
23	9.5	9.0	9.5	5.5	5.5	5.5	5.0	4.5	5.0	4.0	4.0	4.0
24	9.0	8.5	9.0	6.0	5.5	5.5	4.5	4.5	4.5	4.0	3.5	4.0
25	8.5	8.5	8.5	5.5	3.0	5.0	4.5	4.5	4.5	3.5	3.5	3.5
26	9.0	8.0	8.5	5.0	3.5	4.5	4.5	4.5	4.5	4.0	3.5	3.5
27	9.0	8.0	8.5	5.0	5.0	5.0	4.5	4.0	4.0	4.0	3.5	3.5
28	8.5	8.0	8.5	6.0	5.0	5.5	4.5	4.0	4.5	3.5	3.5	3.5
29	9.0	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5	4.0	3.5	3.5
30	8.5	8.0	8.5	6.0	6.0	6.0	4.5	4.0	4.5	3.5	3.5	3.5
31	8.5	8.0	8.0	---	---	---	4.0	4.0	4.0	3.5	3.0	3.5
MONTH	11.0	8.0	9.0	8.0	3.0	6.0	6.0	4.0	5.0	4.5	3.0	4.0

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.0	3.0	3.0	3.5	3.5	3.5	5.0	4.5	5.0	7.5	6.0	7.0
2	3.0	2.5	2.5	3.5	3.0	3.5	5.5	4.5	5.0	8.0	6.5	7.0
3	3.0	3.0	3.0	3.5	3.0	3.5	6.0	4.5	5.0	7.5	6.5	6.5
4	3.5	3.0	3.0	4.0	3.5	3.5	5.5	4.5	5.0	7.5	5.5	6.5
5	3.5	3.5	3.5	4.0	3.5	3.5	5.0	4.5	5.0	8.5	6.0	7.0
6	3.5	3.5	3.5	3.5	3.5	3.5	6.0	4.5	5.0	9.0	6.0	7.5
7	3.5	3.5	3.5	3.5	3.5	3.5	6.5	4.5	5.0	9.5	6.5	7.5
8	4.0	3.5	3.5	4.0	3.5	3.5	6.5	5.0	5.5	9.0	6.5	7.5
9	3.5	3.5	3.5	4.0	3.5	3.5	7.0	5.0	5.5	8.0	7.0	7.5
10	3.5	3.5	3.5	4.0	3.5	3.5	7.0	5.0	5.5	7.5	7.0	7.0
11	3.5	3.0	3.5	4.0	3.5	3.5	6.0	5.0	5.5	7.5	6.5	7.0
12	3.5	3.0	3.0	4.0	3.5	4.0	6.0	5.0	5.5	8.5	6.5	7.0
13	3.5	3.0	3.0	3.5	3.5	3.5	5.5	5.0	5.0	7.0	6.5	7.0
14	3.5	3.5	3.5	3.5	3.5	3.5	6.0	5.0	5.5	7.0	6.5	7.0
15	3.5	3.5	3.5	4.0	3.5	3.5	6.5	5.0	5.5	7.5	6.5	7.0
16	3.5	3.0	3.5	4.5	3.5	4.0	5.5	5.0	5.5	8.0	6.5	7.0
17	3.5	3.0	3.0	4.5	3.5	4.0	6.0	5.0	5.5	9.0	7.0	7.5
18	4.0	3.5	3.5	5.0	4.0	4.5	7.0	5.0	5.5	10.0	6.5	8.0
19	4.5	3.5	3.5	5.5	4.0	4.5	6.0	5.5	6.0	10.0	7.0	8.5
20	4.0	3.5	3.5	5.0	4.0	4.5	6.5	5.5	6.0	9.5	7.0	8.0
21	3.5	3.5	3.5	5.5	4.0	4.5	6.5	5.5	6.0	8.5	7.0	7.5
22	4.0	3.5	3.5	5.0	4.0	4.5	6.0	5.5	5.5	8.5	6.5	7.5
23	4.0	3.5	3.5	4.5	4.5	4.5	7.0	5.5	6.0	9.5	6.5	7.5
24	3.5	3.5	3.5	5.0	4.5	4.5	7.0	5.5	6.0	8.0	7.0	7.5
25	3.5	3.5	3.5	4.5	4.5	4.5	7.0	6.0	6.5	8.5	7.0	8.0
26	3.5	3.5	3.5	5.0	4.5	4.5	7.5	6.0	6.5	8.5	7.5	8.0
27	3.5	3.5	3.5	5.0	4.5	4.5	6.5	6.0	6.5	8.5	7.5	8.0
28	4.0	3.5	3.5	5.0	4.5	5.0	6.5	6.0	6.0	9.5	7.0	8.0
29	---	---	---	6.0	4.5	5.0	7.5	6.0	6.5	8.5	7.0	8.0
30	---	---	---	5.5	5.0	5.0	7.0	6.0	6.5	9.5	7.0	8.0
31	---	---	---	6.0	4.5	5.0	---	---	---	10.0	8.0	8.5
MONTH	4.5	2.5	3.5	6.0	3.0	4.0	7.5	4.5	5.5	10.0	5.5	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.0	7.5	9.0	9.5	9.0	9.0	11.5	10.5	11.0	10.5	10.0	10.0
2	10.0	8.0	9.0	9.0	9.0	9.0	12.0	10.5	11.0	10.5	10.0	10.0
3	10.0	8.0	9.0	9.0	9.0	9.0	12.0	11.0	11.0	10.5	9.5	10.0
4	10.0	8.0	8.5	9.0	8.5	8.5	12.0	10.5	11.0	10.0	9.5	10.0
5	10.0	8.0	8.5	9.0	8.5	8.5	11.5	10.5	11.0	10.0	9.5	10.0
6	10.0	8.0	8.5	10.0	8.5	9.0	12.5	10.5	11.0	10.0	9.5	10.0
7	9.5	8.0	8.5	10.5	9.0	9.5	12.0	10.5	11.0	10.0	9.5	10.0
8	9.5	8.5	9.0	10.5	9.5	10.0	12.0	10.5	11.0	10.5	9.5	10.0
9	9.0	8.0	8.5	9.5	9.0	9.5	12.0	10.5	11.0	10.0	9.5	10.0
10	9.0	7.5	8.0	9.5	9.0	9.0	11.0	10.5	11.0	10.5	9.5	10.0
11	9.0	8.0	8.5	9.0	9.0	9.0	10.5	10.5	10.5	10.0	9.5	10.0
12	9.0	8.0	8.5	10.5	8.5	9.5	11.5	10.5	10.5	10.5	9.5	10.0
13	9.0	7.5	8.5	10.5	9.0	9.5	11.5	10.0	11.0	10.0	9.5	10.0
14	9.5	7.5	8.5	10.5	9.5	10.0	10.5	10.5	10.5	10.5	9.5	10.0
15	8.5	8.0	8.0	10.0	9.5	9.5	11.0	10.5	10.5	10.0	9.5	9.5
16	8.5	7.5	8.0	9.5	9.0	9.5	10.5	10.0	10.5	10.0	9.0	9.5
17	10.5	8.0	9.0	9.5	9.0	9.0	11.0	10.0	10.5	10.5	9.0	9.5
18	9.5	8.0	8.5	10.5	9.0	9.5	11.0	10.0	10.5	10.0	9.0	9.5
19	9.5	8.0	8.5	10.5	9.5	10.0	11.0	10.0	10.5	10.5	9.0	9.5
20	9.5	8.5	9.0	11.0	9.5	10.0	10.5	10.0	10.0	10.0	9.0	9.5
21	9.5	8.5	9.0	11.0	9.5	10.0	11.5	10.0	10.5	10.0	9.5	9.5
22	9.0	8.0	8.5	11.0	9.5	10.0	11.0	10.0	10.5	9.5	8.5	9.0
23	8.5	8.0	8.5	10.5	9.5	10.0	11.0	10.0	10.0	9.5	8.5	9.0
24	9.0	8.0	8.5	11.0	9.5	10.0	10.5	10.0	10.0	10.0	8.5	9.5
25	9.0	8.0	8.5	11.0	9.5	10.0	10.5	10.0	10.0	10.5	9.0	9.5
26	11.0	8.0	9.0	10.0	10.0	10.0	11.5	9.5	10.5	10.5	9.5	10.0
27	11.0	8.0	9.5	11.0	9.5	10.0	12.5	9.5	10.5	10.0	9.5	10.0
28	10.5	9.0	10.0	11.0	10.0	10.5	12.0	10.0	11.0	9.5	9.5	9.5
29	10.0	9.5	9.5	12.5	10.0	11.0	12.5	10.0	11.0	10.5	9.5	10.0
30	10.0	9.0	9.5	13.0	10.0	11.0	11.0	10.5	10.5	10.5	10.0	10.0
31	---	---	---	12.0	10.0	11.0	10.5	10.0	10.5	---	---	---
MONTH	11.0	7.5	8.5	13.0	8.5	9.5	12.5	9.5	10.5	10.5	8.5	10.0
YEAR	13.0	2.5	7.0									

12179800 SKAGIT RIVER ABOVE BACON CREEK NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'10", long 121°23'11", in SE¼SW¼ sec.21, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.1 mi (0.2 km) upstream from Bacon Creek, 5.9 mi (9.5 km) northeast of Marblemount, and at mile 83.0 (133.5 km).

DRAINAGE AREA.--1,289 mi² (3,339 km²) of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 350 ft (107 m), from topographic map.

REMARKS.--Records good. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River by Ross (sta 12175000), Diablo (sta 12176500), and Gorge (sta 12177700) Reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s (498 m³/s) Nov. 1, 1977, gage height, 10.06 ft (3.066 m); minimum daily, 1,590 ft³/s (45.0 m³/s) Oct. 4, 6, 7, 22, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,600 ft³/s (498 m³/s) Nov. 1, gage height, 10.06 ft (3.066 m); minimum daily, 1,590 ft³/s (45.0 m³/s) Oct. 4, 6, 7, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	5940	7030	6730	6250	6850	5910	2650	5060	10200	7110	5750
2	1610	5490	11200	6490	5870	6490	4400	2540	6810	12100	7050	6200
3	1600	2870	7650	7290	5300	6470	4270	2750	7250	11400	6030	3360
4	1590	2390	6020	6490	3750	4940	3290	2710	8190	10900	6250	3210
5	1620	2200	6630	6320	3100	3870	4290	2520	8510	9490	5350	5300
6	1590	2110	5930	7370	5080	6570	3720	2240	7250	7850	4310	5310
7	1590	2160	5940	6200	6470	7130	3000	2280	7990	8130	5190	5420
8	1650	2120	7150	5600	6050	6930	2870	2530	8110	6850	4940	5750
9	1650	2050	7750	5850	6450	5580	2820	3330	9160	8330	4900	4590
10	1620	2760	6810	6340	6850	6730	2830	3770	5670	8530	4430	4070
11	1600	2920	8430	6380	5840	6610	3000	2930	4970	6000	5170	5130
12	1650	2670	9030	5710	6140	5010	3620	2580	5800	5820	3270	5400
13	1810	2580	8870	5390	6570	6430	3320	3570	6090	6090	2580	5690
14	1660	2830	11300	5060	6710	7090	3260	4340	5640	7330	4830	5240
15	1640	2580	9780	4110	6730	5690	3600	3690	5400	6470	5080	4390
16	1640	2470	9180	6070	6450	5210	4000	3540	5440	7630	4580	4470
17	1630	2320	8030	6050	6210	3970	3290	2870	3240	7950	5030	3710
18	1610	2350	7870	5390	3060	2970	3320	2740	3600	8250	5010	4370
19	1610	2240	7390	4160	3140	2800	3150	3240	6360	7770	4430	3950
20	1600	3040	6210	4880	4050	3840	3170	4430	8370	6810	5060	3180
21	1600	5480	5390	6020	5060	3600	4590	4270	9030	5390	4420	2570
22	1590	4230	5030	5510	5490	4560	4540	3470	8850	6450	4050	5060
23	1720	4290	5710	7510	7250	4880	3720	3320	5670	7990	4370	4580
24	2000	2030	4950	6290	7530	4760	2790	2800	4240	6550	4590	3240
25	2350	4580	3860	7170	7570	4320	2480	2400	2750	7330	5260	3320
26	2020	8050	4810	7390	7570	4540	3230	2830	3470	6430	3920	3710
27	1850	4970	6300	6910	7530	6030	4080	2710	5080	6710	2940	4070
28	1830	6650	6750	5780	7490	5550	4180	3010	8030	6140	1750	5890
29	1890	6950	7250	5260	---	4580	2930	2920	11400	4590	2260	6590
30	2040	7110	7090	6320	---	5710	2800	3910	12200	2260	5080	5910
31	1950	---	6970	5800	---	5890	---	4610	---	4270	4430	---
TOTAL	53430	110430	222310	187840	165560	165600	106470	97500	199630	228010	143670	139430
MEAN	1724	3681	7171	6059	5913	5342	3549	3145	6654	7355	4635	4648
MAX	2350	8050	11300	7510	7570	7130	5910	4610	12200	12100	7110	6590
MIN	1590	2030	3860	4110	3060	2800	2480	2240	2750	2260	1750	2570
AC-FT	106000	219000	441000	372600	328400	328500	211200	193400	396000	452300	285000	276600

WTR YR 1978 TOTAL 1819880 MEAN 4986 MAX 12200 MIN 1590 AC-FT 3610000

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE¼SW¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi (0.8 km) north of Marblemount and 0.6 mi (1.0 km) upstream from Cascade River, and at mile 78.7 (126.6 km).

DRAINAGE AREA.--1,381 mi² (3,577 km²) of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft (92.99 m) National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.-Water-discharge records good except those for period of no gage-height record, Jan. 31 to Mar. 15, which are fair. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River, by Ross, Diablo, and Gorge Reservoirs (see stations 12175000, 12176500, 12177700).

AVERAGE DISCHARGE.--7 years (water years 1947-51, 1977-78) 6,142 ft³/s (173.9 m³/s) 4,450,000 ac-ft/yr (5,490 hm³/yr), unadjusted for regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,300 ft³/s (1,680 m³/s) Nov. 27, 1949, gage height, 11.37 ft (3.466 m), from rating curve extended above 20,000 ft³/s (566 m³/s); minimum, 620 ft³/s (17.6 m³/s) Mar. 6, 1944, gage height, 0.55 ft (0.168 m); minimum daily, 1,190 ft³/s (33.7 m³/s) Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,600 ft³/s (555 m³/s) Nov. 1, gage height, 6.44 ft (1.963 m); minimum, 1,740 ft³/s (49.3 m³/s) Oct. 6, gage height, 1.78 ft (0.543 m); minimum daily, 1,760 ft³/s (49.8 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1870	7610	8300	7430	6700	7200	6680	3260	5840	11500	7630	6820
2	1840	6990	15000	7170	6300	7000	5060	3190	7990	14000	7670	7630
3	1810	3600	9670	8070	5600	7000	5060	3370	8670	13100	6580	4200
4	1780	2960	7230	7390	4000	5200	3890	3280	9790	12300	6790	3860
5	1790	2710	7720	7210	3300	4200	4760	3050	10000	10500	5810	5670
6	1760	2600	6830	8310	5200	7200	4340	2770	8590	8830	4730	5910
7	1780	2680	6800	6960	6900	7700	3540	2860	9270	9070	5510	6020
8	1920	2550	7970	7000	6500	7500	3370	3190	9310	7830	5240	6160
9	1940	2520	8640	7030	7000	6000	3280	4070	10300	9270	5240	5090
10	1850	3670	7980	7310	7300	7300	3320	4430	6680	9550	4850	5030
11	1810	3770	10500	7350	6300	7200	3590	3710	5740	6680	5480	5810
12	1850	3440	10900	6510	6600	5400	4120	3320	6540	6400	3890	5880
13	2230	3310	11100	6090	7100	7000	3810	4490	7030	6680	3030	6160
14	1950	3690	14900	5810	7300	7600	3660	5360	6370	8150	5000	5700
15	1890	3310	11800	4790	7300	6000	4040	4580	6120	7140	5630	4880
16	1880	3140	10800	6750	7100	5630	4460	4340	6120	8430	5060	5000
17	1850	2930	9470	6790	6700	4460	3740	3610	3990	8790	5360	4320
18	1820	2880	9150	6050	3300	3440	3790	3490	4400	9110	5360	4910
19	1810	2730	8510	4730	3400	3320	3560	4150	7030	8550	4880	4290
20	1790	3360	7140	5390	4300	4340	3710	5480	9390	7550	5360	3610
21	1790	5770	6160	6650	5400	4040	4940	5360	10000	5980	4760	3120
22	1780	4720	5700	6260	5900	5210	5030	4260	9880	7140	4400	5840
23	2020	4690	6370	8350	7800	5510	4180	3960	6540	8790	4640	5820
24	2600	2650	5570	7030	8100	5670	3300	3440	4910	7280	4910	3890
25	3340	6160	4490	7910	8200	5540	3010	2990	3510	8030	5700	3820
26	2770	10400	5300	8190	8200	5700	3790	3370	4020	7070	4430	4090
27	2430	5930	6960	7750	8100	7390	4790	3440	5770	7430	3390	4350
28	2280	7780	7470	6370	8100	6860	4910	3860	9230	6720	2090	6160
29	2510	8440	8110	5810	---	5740	3590	3610	13200	5150	2550	6910
30	2830	8210	7910	6890	---	6650	3420	4460	14200	2880	5210	6250
31	2630	---	7750	6000	---	6960	---	5270	---	4580	4850	---
TOTAL	64200	135200	262200	211350	178000	185960	122740	120020	230430	254480	156030	157200
MEAN	2071	4507	8458	6818	6357	5999	4091	3872	7681	8209	5033	5240
MAX	3340	10400	15000	8350	8200	7700	6680	5480	14200	14000	7670	7630
MIN	1760	2520	4490	4730	3300	3320	3010	2770	3510	2880	2090	3120
AC-FT	127300	268200	520100	419200	353100	368900	243500	238100	457100	504800	309500	311800

CAL YR 1977 TOTAL 1658750 MEAN 4545 MAX 18000 MIN 1760 AC-FT 3290000
WTR YR 1978 TOTAL 2077810 MEAN 5693 MAX 15000 MIN 1760 AC-FT 4121000

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At Cascade Road bridge in Marblemount, 0.5 mi (0.8 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-70, 1977 to current year.

REMARKS.--Prior to November 1961 published as "above Alma Creek, near Marblemount."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)
OCT , 1977							
04...	1050	--	1790	49	7.2	9.0	5
NOV							
29...	1050	--	9550	46	7.0	6.4	25
DEC							
20...	1100	--	7990	63	7.5	4.8	15
JAN , 1978							
17...	1150	--	7320	74	7.5	4.4	5
FEB							
22...	1010	5900	--	70	7.7	4.7	15
MAR							
07...	1105	7700	--	140	9.4	4.5	10
APR							
04...	1130	--	5420	65	7.6	5.5	10
MAY							
02...	1115	--	4070	58	7.3	7.2	10
JUN							
20...	1125	--	9390	47	7.3	9.4	10
JUL							
18...	1005	--	8990	47	7.3	10.3	10
AUG							
08...	1035	--	5300	48	7.6	12.5	0
SEP							
19...	1140	--	4730	46	7.4	9.6	0

DATE	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977							
04...	3	12.5	.06	.05	.01	.00	.00
NOV							
29...	8	12.8	.10	.04	.02	.00	.00
DEC							
20...	3	13.0	.09	.04	.01	.00	.00
JAN , 1978							
17...	1	12.8	.07	.05	.01	.00	.00
FEB							
22...	1	13.6	.06	.04	.00	.00	.00
MAR							
07...	3	13.5	.05	.02	.01	.00	.00
APR							
04...	1	12.6	.07	.05	.00	.00	.00
MAY							
02...	1	12.0	.05	.02	.00	.00	.00
JUN							
20...	8	11.7	.06	.06	.01	.00	.00
JUL							
18...	4	12.3	.04	.03	.01	.00	.00
AUG							
08...	3	12.6	.05	.04	.02	.00	.00
SEP							
19...	1	11.4	.05	.02	.00	.00	.00

12181100 SOUTH FORK CASCADE RIVER AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'13", long 121°04'23", Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank at outlet of South Cascade Lake, 10.2 mi (16.4 km) upstream from confluence with North Fork, 21 mi (33.8 km) southeast of Marblemount, and at mile 28.9 (46.5 km).

DRAINAGE AREA.--2.36 mi^2 (6.11 km^2).

PERIOD OF RECORD.--July 1957 to September 1961 (seasonal records only; published as "near Marblemount"), October 1961 to current year. Prior to October 1960, monthly discharge only published in WSP 1736; dailies on file in Tacoma district office.

GAGE.--Water-stage recorder. Datum of gage is 5,290.61 ft (1,612.578 m) National Geodetic Vertical Datum of 1929 (from U.S. Coast and Geodetic Survey triangulation point). Prior to Sept. 23, 1960, at datum 0.47 ft (0.143 m) lower. Sept. 23, 1960, to Aug. 10, 1964, at datum 1.34 ft (0.408 m) lower.

REMARKS.--Records good. No regulation or diversion above station. Flow originates at South Cascade Glacier.

AVERAGE DISCHARGE.--17 years (water years 1962-78), 25.8 ft^3/s (0.731 m^3/s), 148.22 in/yr (3,764 mm/yr), 18,658 acre-ft/yr (23.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 194 ft^3/s (5.49 m^3/s) Oct. 24, 1959; minimum discharge recorded, 0.6 ft^3/s (0.017 m^3/s) probably sometime Mar. 21-31, 1964, gage height, 0.16 ft (0.049 m), from recorded range in stage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 116 ft^3/s (3.29 m^3/s) Aug. 27, gage height, 2.77 ft (0.845 m); minimum daily, 1.1 ft^3/s (0.031 m^3/s) Mar. 5-6, gage height, 0.52 ft (0.159 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	21	12	2.3	1.5	1.2	5.0	6.0	22	92	87	94
2	12	49	16	2.2	1.7	1.2	4.1	5.3	39	89	95	101
3	10	23	15	2.7	2.1	1.0	3.6	5.0	52	86	102	96
4	7.6	13	13	3.6	2.0	1.0	3.1	4.7	66	82	109	91
5	6.7	9.9	9.9	3.8	1.7	1.0	3.1	4.2	73	81	101	86
6	6.3	8.9	9.9	3.3	1.7	1.0	2.9	3.9	76	87	90	67
7	6.5	9.0	10	3.1	1.6	1.1	2.5	4.2	71	95	89	57
8	6.7	7.6	8.1	3.5	1.6	1.2	2.3	6.9	69	99	95	50
9	6.7	7.7	7.2	3.6	1.6	1.3	2.1	10	72	94	100	64
10	6.0	9.5	9.8	3.1	1.5	1.3	2.1	12	60	80	93	71
11	5.6	12	14	2.9	1.4	1.2	3.7	10	51	64	86	62
12	7.2	9.8	12	2.8	1.4	.12	3.9	7.8	55	60	82	51
13	22	8.2	9.7	2.5	1.3	1.3	3.9	6.8	55	69	73	45
14	15	9.5	9.8	2.3	1.2	1.5	3.7	6.6	47	76	64	43
15	13	8.6	7.8	2.1	1.2	1.5	3.3	6.3	40	76	88	49
16	16	9.0	7.1	2.0	1.2	1.4	3.5	5.9	34	88	95	41
17	13	7.8	5.8	2.0	1.2	1.4	3.5	5.0	32	82	77	36
18	11	6.2	5.0	1.8	1.2	1.3	3.1	4.8	44	77	64	31
19	9.3	5.2	4.7	1.7	1.2	1.3	2.7	7.8	46	81	74	28
20	8.4	4.9	4.2	1.7	1.1	1.3	2.7	17	49	81	66	23
21	7.7	4.8	4.0	1.7	1.1	1.3	2.7	28	56	84	60	26
22	7.3	4.8	3.9	2.1	1.1	1.6	2.7	24	59	92	59	34
23	11	4.8	3.3	2.0	1.3	2.4	2.6	14	57	78	53	43
24	17	4.8	3.1	1.8	1.3	3.1	2.4	10	52	88	60	46
25	23	11	2.9	1.7	1.2	3.9	2.4	8.4	52	96	67	45
26	14	59	2.8	1.7	1.2	4.5	4.5	7.2	54	98	61	44
27	10	29	2.5	1.6	1.3	5.9	9.9	8.9	68	111	56	53
28	8.3	20	2.4	1.6	.12	6.6	11	17	85	99	56	42
29	8.0	18	2.7	1.6	---	6.6	9.4	16	96	92	60	39
30	8.3	14	2.8	1.5	---	6.4	8.0	14	94	88	67	44
31	7.8	---	2.7	1.5	---	5.9	---	12	---	86	79	---
TOTAL	325.4	410.0	224.1	71.8	38.02	71.82	120.4	299.7	1726	2651	2408	1602
MEAN	10.5	13.7	7.23	2.32	1.36	2.32	4.01	9.67	57.5	85.5	77.7	53.4
MAX	23	59	16	3.8	2.1	6.6	11	28	96	111	109	101
MIN	5.6	4.8	2.4	1.5	.12	.12	2.1	3.9	22	60	53	23
CFSM	4.45	5.81	3.06	.98	.58	.98	1.70	4.10	24.4	36.2	32.9	22.6
IN.	5.13	6.46	3.53	1.13	.60	1.13	1.90	4.72	27.19	41.77	37.94	25.24
AC-FT	645	813	445	142	75	142	239	594	3420	5260	4780	3180

CAL YR 1977 TOTAL 10253.20 MEAN 28.1 MAX 107 MIN 2.4 CFSM 11.9 IN 161.55 AC-FT 20340
WTR YR 1978 TOTAL 9948.24 MEAN 27.3 MAX 111 MIN .12 CFSM 11.6 IN 156.74 AC-FT 19730

12181200 SALIX CREEK AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'16", long 121°04'35", in SE¼ sec.2, T.33 N., R.13 E.(unsurveyed), Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank 900 ft (274 m) west of South Cascade Lake, 0.5 mi (0.8 km) upstream from mouth, and 21 mi (33.8 km) southeast of Marblemount.

DRAINAGE AREA.--0.078 mi² (0.202 km²).

PERIOD OF RECORD.--June to November 1961, May 1962 to January 1964 (fragmentary), May 1964 to November 1965, March 1966 to October 1973, July 1974 to October 1975, May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,200 ft (1,585 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--11 years (water years 1965, 1967-73, 1975, 1978), 0.58 ft³/s (0.0164 m³/s), 100.66 in/yr (2,557 mm/yr), 422 acre-ft/yr (0.520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 29 ft³/s (0.82 m³/s) Feb. 3, 1963, gage height, 3.43 ft (1.045 m), from rating curve extended above 9 ft³/s (0.25 m³/s); minimum, 0.02 ft³/s (0.001 m³/s) between Aug. 24, and 29, 1961, Aug. 29, 30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16.2 ft³/s (0.46 m³/s) Nov. 1, gage height, 2.02 ft (0.615 m); minimum, 0.04 ft³/s (0.001 m³/s) part or all of each day Feb. 11 to Feb. 19, gage height, 0.20 ft (0.061 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	2.6	.36	.09	.06	.06	.41	.47	2.8	2.6	.24	1.5
2	.19	2.0	.73	.09	.06	.06	.33	.47	3.3	2.6	.22	.62
3	.13	.63	.63	.09	.06	.08	.28	.49	4.3	2.1	.20	.72
4	.13	.48	.37	.09	.05	.08	.24	.39	5.0	1.9	.19	.60
5	.11	.45	.29	.08	.05	.06	.20	.31	4.9	1.9	.19	.56
6	.11	.37	.25	.08	.05	.06	.18	.33	4.2	2.3	.17	.61
7	.23	.31	.22	.08	.05	.08	.14	.72	3.4	2.5	.16	.40
8	.40	.28	.20	.34	.05	.08	.13	1.2	3.2	2.1	.14	.38
9	.33	.33	.19	.30	.05	.08	.13	1.5	2.9	1.6	.13	.56
10	.23	1.0	.41	.19	.05	.08	.23	1.3	1.6	1.5	.16	1.1
11	.18	.78	.90	.14	.05	.08	.63	.71	1.9	.95	.16	.54
12	.45	.48	.38	.11	.04	.06	.46	.49	2.7	1.1	.31	.37
13	.45	.37	.39	.10	.04	.06	.36	.54	2.3	1.2	.18	.31
14	.23	.33	.63	.10	.04	.06	.29	.69	1.8	1.2	.17	.26
15	.18	.31	.40	.09	.04	.06	.24	.57	1.5	1.1	1.3	.83
16	.20	.28	.27	.09	.04	.06	.22	.41	1.2	1.7	.96	.74
17	.15	.24	.22	.08	.04	.08	.19	.37	2.2	1.1	.49	.79
18	.15	.23	.19	.08	.04	.08	.17	.59	2.5	.92	.32	.78
19	.15	.20	.16	.08	.04	.10	.18	1.5	2.3	.79	.81	.50
20	.13	.16	.14	.08	.05	.10	.20	2.2	2.8	.72	.36	.38
21	.13	.16	.14	.07	.07	.16	.19	2.6	2.7	.68	.25	1.0
22	.13	.14	.13	.07	.07	.24	.18	1.7	2.6	.61	.23	3.0
23	.33	.13	.12	.07	.07	.41	.17	.92	1.8	.57	.20	1.7
24	.60	.12	.11	.07	.07	.41	.17	.79	1.6	.52	.30	.80
25	.63	2.5	.11	.06	.07	.33	.51	.61	1.8	.46	.64	.53
26	.45	3.8	.10	.06	.06	.60	1.3	.52	2.6	.80	.32	.45
27	.33	.74	.10	.06	.06	1.1	1.4	1.7	3.5	.60	.22	.53
28	.31	.46	.10	.06	.06	.94	.79	1.8	4.5	.41	.18	.45
29	.45	.86	.10	.06	---	.79	.52	.96	3.6	.35	.14	.37
30	.28	.47	.10	.06	---	.70	.53	.74	3.5	.31	.17	.33
31	.37	---	.10	.06	---	.51	---	1.3	---	.28	.42	---
TOTAL	8.38	21.21	8.54	3.08	1.48	7.65	10.97	28.89	85.0	37.47	9.93	21.71
MEAN	.27	.71	.28	.099	.053	.25	.37	.93	2.83	1.21	.32	.72
MAX	.63	3.8	.90	.34	.07	1.1	1.4	2.6	5.0	2.6	1.3	3.0
MIN	.11	.12	.10	.06	.04	.06	.13	.31	1.2	.28	.13	.26
CFSM	3.38	8.88	3.50	1.24	.66	3.13	4.63	11.6	35.4	15.1	4.00	9.00
IN.	3.85	9.74	3.92	1.41	.68	3.51	5.04	13.27	39.04	17.21	4.56	9.97
AC-FT	17	42	17	6.1	2.9	15	22	57	169	74	20	43

CAL YR 1977 TOTAL 179.65 MEAN .49 MAX 6.9 MIN .03 CFSM 6.13 IN 82.51 AC-FT 356
WTR YR 1978 TOTAL 244.31 MEAN .67 MAX 5.0 MIN .04 CFSM 8.38 IN 112.20 AC-FT 485

12182500 CASCADE RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°31'37", long 121°24'50", in NW¼NW¼ sec.17, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on left bank at Fish Hatchery Road bridge 0.5 mi (0.8 km) upstream from Jordan Creek, 0.7 mi (1.1 km) east of Marblemount, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--172 mi² (445 km²).

PERIOD OF RECORD.--September 1928 to current year. Water temperatures May 1952 to November 1963, September 1964, October 1965 to September 1973.

REVISED RECORDS.--WSP 832: 1936. WSP 1932: Drainage area (at site then in use).

GAGE.--Water-stage recorder. Altitude of gage is 330 ft (101 m) from topographic map.

REMARKS.--Records good. No regulatin or diversion above station.

AVERAGE DISCHARGE.--50 years, 1,035 ft³/s (29.31 m³/s) 81.72 in/yr (2,076 mm/yr) 749,900 acre-ft/yr (925 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,700 ft³/s (530 m³/s) Nov. 20, 1962, from rating curve extended above 5,600 ft³/s (159 m³/s); maximum gage height, 11.47 ft (3.496 m) Nov. 27, 1949 at site and datum then in use; minimum discharge, 118 ft³/s (3.34 m³/s) Nov. 30, 1952; minimum gage height, 1.11 ft (0.338 m) Feb. 8, 1937 at site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 22 ft (6.7 m), at site and datum then in use, discharge, 46,000 ft³/s (1,300 m³/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 3,600 ft³/s (102 m³/s) and maximum(*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	7,180	203	15.97	4.868
Nov. 26	0100	*8,750	248	*16.33	4.977
Dec. 2	1400	4,810	136	15.27	4.654
Dec. 14	0400	3,800	108	14.88	4.535
June 4	2400	4,250	120	15.06	4.590

Minimum discharge, 262 ft³/s (7.42 m³/s) Oct. 23, gage height, 11.93 ft (3.636 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	2200	1660	494	420	390	1040	828	1350	2250	1280	1660
2	385	2460	4420	482	480	370	923	820	1930	2480	1360	1960
3	355	1170	3420	488	560	350	828	828	2730	2180	1420	1420
4	332	852	2140	548	540	340	772	772	3400	1950	1450	1430
5	312	716	1560	679	580	332	732	700	3580	1830	1290	1240
6	296	651	1370	651	640	324	679	665	3340	1950	1110	1310
7	304	672	1210	602	580	405	637	693	2840	2260	1110	1090
8	350	574	1030	995	580	506	602	844	2460	2260	1170	950
9	390	574	932	986	550	464	574	1020	2550	1930	1230	1050
10	328	896	1310	896	520	425	588	1090	2120	1610	1110	1380
11	308	1010	2820	828	480	415	700	1020	1640	1340	1010	1270
12	355	896	2380	756	460	395	637	1000	1630	1210	1080	1030
13	665	828	2490	700	440	390	602	1050	1760	1500	887	905
14	420	1030	3320	672	425	395	560	1190	1540	1710	772	804
15	375	914	2480	665	405	370	536	1170	1360	1660	1390	968
16	400	836	1920	651	380	380	554	1070	1230	2180	1400	977
17	340	764	1550	616	365	395	536	1010	1210	1750	1050	986
18	320	665	1310	581	355	440	524	986	1670	1550	852	905
19	300	595	1150	560	350	488	524	1220	1670	1600	1190	828
20	286	536	995	542	380	494	560	1680	1780	1570	959	756
21	282	488	905	554	405	530	542	2010	1950	1630	836	852
22	272	464	836	581	430	665	536	1570	1960	1780	796	1330
23	345	446	788	554	524	868	524	1220	1690	1830	740	1920
24	400	446	756	524	536	968	518	1030	1450	1740	796	1580
25	716	2070	700	506	488	1420	542	905	1420	1570	968	1320
26	623	4870	651	500	452	1540	740	828	1430	1600	796	1160
27	494	1850	609	494	430	1460	1110	923	1900	1930	724	1190
28	425	1570	574	470	410	1450	1150	1240	2660	1480	716	950
29	470	2220	595	464	---	1350	986	1080	2910	1380	756	860
30	548	1570	588	430	---	1310	905	923	2530	1330	923	836
31	512	---	530	425	---	1210	---	986	---	1280	1160	---
TOTAL	12328	34833	46999	18894	13165	20831	20661	32371	61690	54320	32331	34917
MEAN	398	1161	1516	609	470	672	689	1044	2056	1752	1043	1164
MAX	716	4870	4420	995	640	1540	1150	2010	3580	2480	1450	1960
MIN	272	446	530	425	350	324	518	665	1210	1210	716	756
CFSM	2.31	6.75	8.81	3.54	2.73	3.91	4.01	6.07	12.0	10.2	6.06	6.77
IN.	2.67	7.53	10.16	4.09	2.85	4.51	4.47	7.00	13.34	11.75	6.99	7.55
AC-FT	24450	69090	93220	37480	26110	41320	40980	64210	122400	107700	64130	69260

CAL YR 1977 TOTAL 324511 MEAN 889 MAX 5860 MIN 268 CFSM 5.17 IN 70.18 AC-FT 643700
WTR YR 1978 TOTAL 383340 MEAN 1050 MAX 4870 MIN 272 CFSM 6.11 IN 82.91 AC-FT 760400

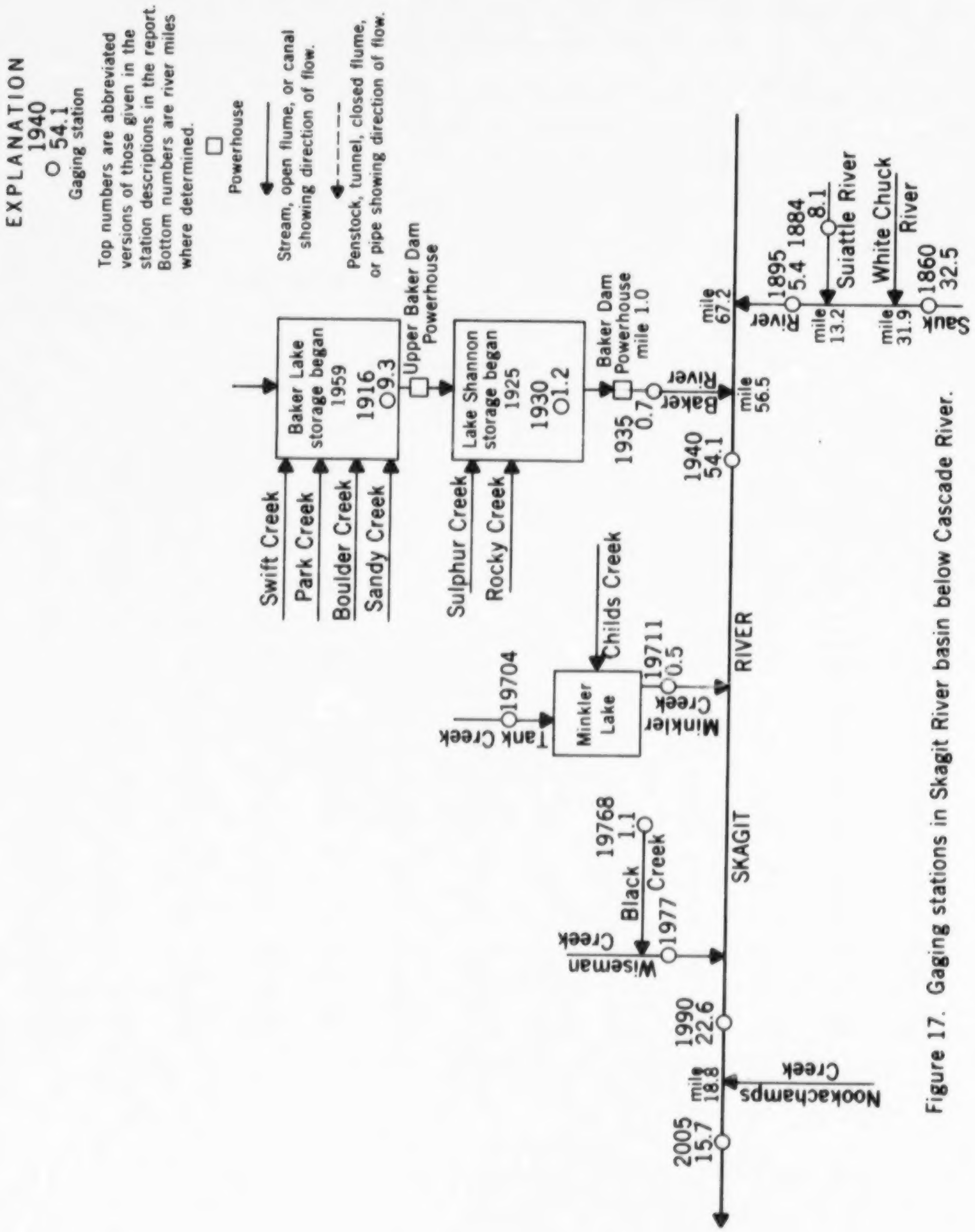

EXPLANATION
1940
54.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Swift Creek
Park Creek
Boulder Creek
Sandy Creek
Baker Lake storage began 1959
1916
9.3
Upper Baker Dam Powerhouse
Sulphur Creek
Rocky Creek
Lake Shannon storage began 1925
1930
1.2
Baker Dam Powerhouse mile 1.0
1935
0.7
Baker River
mile 56.5
1940
54.1
mile 67.2
1895
5.4
1884
8.1
Suiattle River
mile 13.2
White Chuck River
1860
32.5
mile 31.9
Sauk River
Childs Creek
Tank Creek
19704
Minkler Lake
Minkler Creek
19711
0.5
RIVER
19768
1.1
Black Creek
Wiseman Creek
1977
SKAGIT
1990
22.6
Nookachamps Creek
mile 18.8
2005
15.7

Figure 17. Gaging stations in Skagit River basin below Cascade River.

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE¼NE¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi (1.0 km) upstream from White Chuck River, 8.4 mi (13.5 km) southeast of Darrington and at mile 32.5 (52.3 m).

DRAINAGE AREA.--152 mi² (394 km²).

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m), from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--55 years (water years 1918-22, 1929-78), 1,149 ft³/s (32.54 m³/s), 102.65 in/yr (2,607 mm/yr), 832,500 acre-ft/yr (1,030 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s (855 m³/s) Nov. 27, 1949, gage height, 14.90 ft (4.542 m), from rating curve extended above 15,000 ft³/s (425 m³/s); minimum, 115 ft³/s (3.26 m³/s) Nov. 15, 16, 30, Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2200	*12,900	365	*9.41	2.868	Dec. 11	0400	6,150	174	7.08	2.158
Nov. 26	0200	12,500	354	9.26	2.822	Dec. 14	0100	5,280	150	6.70	2.042
Dec. 2	1500	8,790	249	8.03	2.448						

Minimum discharge, 258 ft³/s (7.31 m³/s) Oct. 22, 23, gage height, 2.78 ft (0.847 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	422	4820	2800	524	430	473	1240	1010	1470	1680	706	1370
2	386	5000	7870	511	539	440	1080	998	1970	2030	712	1540
3	357	2150	5480	585	849	420	966	998	2630	1700	744	990
4	333	1490	3200	1130	765	410	894	918	3240	1520	751	894
5	312	1210	2180	1230	744	405	849	835	3510	1410	682	821
6	296	1070	2170	1020	950	390	772	793	3170	1360	604	942
7	378	1200	2020	844	863	550	718	807	2600	1540	592	800
8	382	996	1510	1310	870	814	676	926	2240	1620	610	712
9	467	1050	1260	1250	765	670	646	1100	2350	1430	634	765
10	385	1790	2590	1060	682	598	652	1170	2000	1170	580	1180
11	346	1730	5390	917	622	556	765	1210	1680	1020	539	1020
12	339	1560	4010	816	562	522	712	1190	1670	926	610	870
13	506	1450	3900	745	522	517	682	1420	1740	1030	556	751
14	403	2240	4490	710	495	500	646	1770	1540	1150	489	670
15	366	1760	3340	703	473	473	622	1630	1390	1130	849	751
16	364	1460	2450	682	435	462	640	1390	1230	1300	842	712
17	333	1200	1850	640	420	473	640	1260	1200	1160	676	718
18	311	1010	1500	598	405	495	622	1210	1530	1010	562	664
19	295	880	1270	569	405	528	622	1450	1610	998	676	610
20	282	793	1090	548	415	550	682	1950	1670	974	574	562
21	272	717	974	616	451	580	676	2330	1740	1010	517	658
22	264	675	889	687	495	712	670	1940	1710	1070	506	1920
23	367	648	816	598	616	966	646	1500	1540	1080	462	3460
24	506	661	751	551	664	1300	622	1250	1400	1010	511	2040
25	1080	3950	700	541	604	1870	658	1080	1310	918	664	1420
26	812	7430	655	549	562	2090	863	1010	1250	958	628	1140
27	627	3140	615	518	522	1910	1470	1120	1510	1150	533	1040
28	525	2620	584	496	511	1910	1430	1500	1960	856	495	870
29	585	3560	604	480	---	1700	1220	1310	2230	793	495	800
30	998	2330	595	456	---	1600	1100	1130	1870	758	528	737
31	939	---	544	442	---	1440	---	1170	---	737	688	---
TOTAL	14238	60590	68097	22326	16636	26324	24481	39375	56960	36498	19015	31427
MEAN	459	2020	2197	720	594	849	816	1270	1899	1177	613	1048
MAX	1080	7430	7870	1310	950	2090	1470	2330	3510	2030	849	3460
MIN	264	648	544	442	405	390	622	793	1200	737	462	562
CFSM	3.02	13.3	14.5	4.74	3.91	5.59	5.37	8.36	12.5	7.74	4.03	6.90
IN.	3.48	14.83	16.67	5.46	4.07	6.44	5.99	9.64	13.94	8.93	4.65	7.69
AC-FT	28240	120200	135100	44280	33000	52210	48560	78100	113000	72390	37720	62340

CAL YR 1977 TOTAL 366148 MEAN 1003 MAX 7870 MIN 264 CFSM 6.60 IN 89.61 AC-FT 726300
WTR YR 1978 TOTAL 415967 MEAN 1140 MAX 7870 MIN 264 CFSM 7.50 IN 101.80 AC-FT 825100

12188400 SUIATTLE RIVER ABOVE BIG CREEK NEAR DARRINGTON, WA

LOCATION.--Lat 48°20'32", long 121°27'08", in SW¼SE¼ sec.13, T.33 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on right bank 0.3 mi (0.5 km) upstream from Big Creek, 1.5 mi (2.4 km) downstream from Tenas Creek, 9.5 mi (15.3 km) northeast of Darrington, and at mile 8.1 (13.0 km).

DRAINAGE AREA.--307 mi² (795 km²).

PERIOD OF RECORD.--December 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good except those for period Nov. 2-25, which are fair.

AVERAGE DISCHARGE.--7 years, 1,855 ft³/s (52.53 m³/s) 82.06 in/yr (2.084 mm/yr), 1,344,000 acre-ft/yr (1,660 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,700 ft³/s (841 m³/s) Dec. 4, 1975, gage height, 12.88 ft (3.926 m); minimum daily, 400 ft³/s (11.3 m³/s) Jan. 4, 5, Feb. 5, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2100	8,380	237	8.64	2.633	Dec. 2	0800	9,610	272	9.04	2.755
Nov. 26	0200	*14,600	413	*10.38	3.164	June 5	0100	7,340	208	8.2[illegible]	2.518

Minimum discharge, 658 ft³/s (18.6 m³/s) Oct. 23, minimum gage height, 3.19 ft (0.972 m) Mar. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	2760	3160	1000	805	751	1660	1390	2200	3740	2000	2240
2	1020	2850	8380	979	894	723	1500	1400	3030	3850	2060	2280
3	965	1880	5660	1070	1080	701	1370	1390	4170	3450	2110	1930
4	916	1630	3940	1390	1030	702	1310	1310	5560	3200	2160	1920
5	881	1450	3160	1440	1070	692	1260	1230	6280	3080	1980	1830
6	839	1280	3030	1330	1190	673	1170	1200	5960	3210	1850	1990
7	930	1330	2680	1250	1120	835	1110	1250	4920	3650	1820	1720
8	930	1130	2220	1790	1100	981	1070	1430	4240	3760	1850	1510
9	1130	1180	1940	1670	1040	865	1020	1700	4230	3350	1920	1660
10	909	1700	2600	1520	982	806	1060	1770	3560	2810	1840	2110
11	832	1630	5180	1430	931	784	1260	1690	2980	2400	1700	1820
12	853	1470	4750	1330	885	758	1130	1610	2910	2170	1640	1670
13	1260	1410	4880	1280	853	748	1090	1760	2920	2450	1440	1540
14	972	1860	5890	1240	828	748	1030	1920	2640	2790	1350	1410
15	874	1610	4600	1220	810	716	998	1840	2400	2780	2030	1580
16	937	1440	3740	1170	769	724	1030	1770	2190	3240	1900	1560
17	860	1290	3130	1110	748	753	1000	1710	2160	2840	1730	1590
18	797	1130	2760	1060	739	793	988	1700	2790	2540	1420	1440
19	766	1030	2450	1030	745	850	982	2060	2870	2520	1690	1320
20	730	951	2150	1000	755	857	1050	2750	3070	2530	1450	1240
21	700	867	1850	1060	804	913	1000	3250	3350	2510	1350	1400
22	682	830	1680	1080	820	1110	971	2740	3370	2680	1350	2150
23	797	790	1510	986	931	1410	938	2190	3080	2780	1270	3010
24	832	860	1430	947	937	1560	929	1920	2800	2670	1480	2440
25	1450	3260	1330	950	882	1980	1010	1720	2630	2420	1570	2080
26	1130	7310	1270	947	852	2110	1290	1600	2620	2610	1350	1900
27	909	3180	1210	899	818	2050	1770	1720	3150	3050	1260	1900
28	811	2710	1170	884	790	2040	1740	2010	4130	2460	1270	1760
29	909	3350	1200	861	---	1950	1560	1820	4700	2240	1360	1560
30	1100	2590	1160	824	---	1980	1480	1650	4060	2110	1580	1420
31	1010	---	1040	814	---	1830	---	1750	---	2010	1850	---
TOTAL	28841	56758	91150	35561	25208	34393	35776	55250	104970	87900	51630	53980
MEAN	930	1892	2940	1147	900	1109	1193	1782	3499	2835	1665	1799
MAX	1450	7310	8380	1790	1190	2110	1770	3250	6280	3850	2160	3010
MIN	682	790	1040	814	739	673	929	1200	2160	2010	1260	1240
CFSM	3.03	6.16	9.58	3.74	2.93	3.61	3.89	5.81	11.4	9.24	5.42	5.86
IN.	3.49	6.88	11.04	4.31	3.05	4.17	4.34	6.69	12.72	10.65	6.26	6.54
AC-FT	57210	112600	180800	70540	50000	68220	70960	109600	208200	174300	102400	107100

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CAL YR 1977  TOTAL  557967   MEAN  1529   MAX  8380   MIN 535   CFSM 4.98   IN 67.61   AC-FT   1107000
WTR YR 1978  TOTAL  661417   MEAN  1812   MAX  8380   MIN 673   CFSM 5.90   IN 80.15   AC-FT   1312000
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12189498 SAUK RIVER NEAR ROCKPORT, WA

LOCATION.--Lat 48°24'24", long 121°33'27", in SW¼NE¼ sec.30, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, at highway bridge, 1.5 mi (2.4 km) upstream from gaging station (12189500) and 5.7 mi (9.2 km) south of Rockport.

PERIOD OF RECORD.--Water years 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1010	1620	70	6.4	6.8	0	2
NOV							
29...	0945	13100	40	7.0	5.6	75	38
DEC							
20...	1025	5280	60	7.4	2.8	15	4
JAN , 1978							
17...	1100	3090	60	7.4	4.5	10	1
FEB							
22...	0940	2170	[illegible]	7.6	5.6	15	1
MAR							
07...	1025	1910	69	7.5	5.3	20	2
APR							
04...	1050	3490	57	7.6	6.4	15	1
MAY							
02...	1045	3590	55	7.4	7.5	20	3
JUN							
20...	1045	6670	36	7.3	9.6	10	5
JUL							
18...	0935	4950	37	7.5	10.7	25	20
AUG							
08...	0920	3250	45	7.7	13.7	30	46
SEP							
19...	1115	2630	49	7.5	9.1	5	2

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	12.6	.08	.05	.01	.01	.03
NOV						
29...	13.0	.15	.17	.08	.00	.00
DEC						
20...	13.5	.13	.03	.01	.00	.00
JAN , 1978						
17...	12.6	.12	.03	.02	.00	.00
FEB						
22...	13.1	.06	.07	.01	.00	.00
MAR						
07...	12.7	.06	.02	.01	.00	.00
APR						
04...	12.0	.08	.05	.01	.00	.00
MAY						
02...	12.0	.05	.03	.01	.00	.00
JUN						
20...	10.7	.03	.05	.01	.00	.00
JUL						
18...	12.0	.02	.10	.04	.00	.00
AUG						
08...	12.0	.03	.02	.17	.01	.03
SEP						
19...	11.2	.04	.03	.01	.00	.00

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW¼NW¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi (7.1 km) southeast of Rockport, 7.6 mi (12.2 m) southeast of Sauk, 7.8 mi (12.6 km) downstream from Suiattle River, and at mile 5.4 (8.7 km).

DRAINAGE AREA.--714 mi² (1,849 km²).

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year. Published as "near Suiattle Crossing, near Sauk" 1910-12. Water temperatures March 1970 to April 1971.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft (81.1 m) National Geodetic Vertical Datum of 1929 (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1 mi (1.6 km) downstream to 5 mi (8.0 km) upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum.

REMARKS.--Records good. No regulation. Small diversion for millpond at Darrington and for domestic use.

AVERAGE DISCHARGE.--50 years (water years 1929-78), 4,402 ft³/s (124.7 m³/s) 83.72 in/yr (2,126 mm/yr, 3,189,000 acre-ft/yr (3,930 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,400 ft³/s (2,330 m³/s) Nov. 27, 1949, gage height, 16.93 ft (5.160 m); minimum, 572 ft³/s (16.2 m³/s) Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0300	26,300	745	10.08	3.072
Nov. 26	0700	*35,800	1,010	*11.55	3.520
Dec. 2	1700	28,800	816	10.48	3.194
Dec. 11	0600	23,400	663	9.60	2.926
Dec. 14	0300	24,700	700	9.82	2.993

Minimum discharge, 1,180 ft³/s (33.4 m³/s) Oct. 23, gage height, 3.16 ft (0.963 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2140	7720	8560	2570	2200	2030	4770	3630	5270	7540	3590	4550
2	1910	14000	24300	2470	2680	1930	4200	3570	7120	8020	3710	6160
3	1730	6770	19600	2640	4320	1850	3750	3590	9310	7270	3880	4150
4	1600	4940	11400	5100	3690	1820	3490	3370	11400	6550	4030	3780
5	1500	4070	8420	5740	3430	1790	3390	3090	12600	6220	3730	3450
6	1410	3620	8060	4900	4100	1740	3150	2910	12100	6250	3230	3900
7	1620	4170	8390	3990	3650	2150	2910	2950	10200	7090	3170	3390
8	1670	3470	6330	6600	3650	3330	2770	3370	8830	7450	3170	2970
9	2010	3590	5260	6320	3270	2700	2630	4000	9040	6730	3370	3150
10	1730	6370	8840	5170	2950	2390	2610	4320	8200	5500	3210	4400
11	1570	5940	22300	4520	2700	2270	3070	4500	6670	4720	2900	4100
12	1530	5430	18100	3970	2500	2150	2860	4750	6520	4150	2860	3490
13	2150	5220	16200	3620	2350	2120	2720	5050	6760	4620	2680	3050
14	1830	7500	20300	3470	2250	2120	2570	6430	6220	5270	2380	2730
15	1640	6430	14300	3410	2200	2010	2460	5980	5530	5370	3510	2880
16	1660	5290	10700	3280	2070	1990	2540	5250	5000	6130	3800	3030
17	1530	4560	8430	3090	1990	2070	2570	4900	4650	5740	2970	3070
18	1420	3840	7060	2900	1950	2170	2550	4600	6010	4850	2520	2880
19	1350	3370	6070	2760	1950	2250	2540	5220	6280	4870	3010	2630
20	1300	2990	5270	2660	1980	2280	2770	6940	6610	4750	2700	2460
21	1240	2650	4810	2870	2060	2330	2730	8320	7120	4850	2360	2590
22	1220	2540	4420	3220	2170	2720	2700	7210	7180	5150	2330	5400
23	1460	2440	4050	2850	2450	3430	2590	5710	6520	5370	2170	10300
24	1690	2500	3700	2650	2660	4900	2500	4870	5800	5200	2350	7420
25	3370	7870	3470	2590	2460	6970	2550	4250	5420	4670	2910	5560
26	3090	24900	3260	2660	2330	8110	3150	3930	5270	4700	2630	4570
27	2480	10500	3070	2510	2220	7090	4800	4200	6190	6070	2310	4300
28	2190	9220	2930	2420	2140	7090	5100	5400	7960	4570	2200	3630
29	2390	11300	3080	2370	---	6370	4350	4900	9200	4100	2230	3350
30	3270	8120	3040	2270	---	5920	3980	4250	8170	3850	2380	3090
31	3330	---	2750	2210	---	5500	---	4300	---	3710	2970	---
TOTAL	59030	191330	276470	107840	74370	103590	94770	145760	223150	171330	91260	120430
MEAN	1904	6378	8918	3479	2656	3342	3159	4702	7438	5527	2944	4014
MAX	3370	24900	24300	6600	4320	8110	5100	8320	12600	8020	4030	10300
MIN	1220	2440	2750	2210	1950	1740	2460	2910	4650	3710	2170	2460
CFSM	2.67	8.93	12.5	4.87	3.72	4.68	4.42	6.59	10.4	7.74	4.12	5.62
IN.	3.08	9.97	14.40	5.62	3.87	5.40	4.94	7.59	11.63	8.93	4.75	6.27
AC-FT	117100	379500	548400	213900	147500	205500	188000	289100	442600	339800	181000	238900

CAL YR 1977 TOTAL 1432680 MEAN 3925 MAX 24900 MIN 1220 CFSM 5.50 IN 74.64 AC-FT 2842000
WTR YR 1978 TOTAL 1659330 MEAN 4546 MAX 24900 MIN 1220 CFSM 6.37 IN 86.45 AC-FT 3291000

RESERVOIRS IN SKAGIT RIVER BASIN, WA

12175000 ROSS RESERVOIR.--(See sta no. 12175000).

12176500 DIABLO RESERVOIR.--Lat 48°42'56", long 121°07'52", in SE¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ros Lake National Recreation Area, in Diablo Dam on Skagit River, 1.2 mi (1.9 km) downstream from Thunder Creek, 6.0 mi (9.7 km) northeast of Newhalem, and at mile 101.0 (162.5 km). DRAINAGE AREA, 1,125 mi² (2,914 km²) includes 400 mi² (1,036 km²) in Canada. PERIOD OF RECORD, October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (city of Seattle datum). Prior to Oct. 1, 1964, at datum 0.28 ft (0.085 m) higher.

Reservoir is formed by concrete arch dam, completed in 1930, storage began in October 1929. Usable storage 8,820 acre-ft (10.9 hm³) between elevations 1,195 ft (364.2 m) normal lower limit of operation, and 1,205 ft (367.3 m) top of taintor gates. Dead storage, below elevation 1,040 ft (317.0 m), 12,900 acre-ft (15.9 hm³). Crest of spillway is at elevation 1,187 ft (361.8 m). Water used by city of Seattle for power development at Diablo and Gorge Powerplants. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft (112 hm³) July 14, 1933, elevation, 1,206.5 ft (367.74 m); minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 89,901 acre-ft (111 hm³) June 15, elevation, 1,206.02 ft (367.595 m); m); minimum, 81,830 acre-ft (101 hm³) Jan. 30, elevation, 1,196.88 ft (364.809 m).

12177700 GORGE RESERVOIR.--Lat 48°41'53", long 121°12'25", in NW¼ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, in Gorge Dam on Skagit River, 2.4 mi (3.9 km) upstream from city of Seattle Gorge powerplant at Newhalem, and at mile 96.6 (155.4 km). DRAINAGE AREA, 1,159 mi² (3,002 km²), includes 400 mi² (1,036 km²) in Canada. PERIOD OF RECORD, June 1960 to current year. GAGE, water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or dial in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929, Gorge High Dam datum, and 1,792 ft (0.546 m) below National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

Reservoir is formed by concrete arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft (2.61 hm³) between elevations 865 ft (263.7 m), normal lower limit of operation and 875 ft (266.7 m), top of gates. Lowest outlet at elevation 760 ft (231.6 m). No dead storage. Crest of spillway is at elevation 825 ft (251.5 m). Water used by city of Seattle for power development at Gorge powerplant. Capacity table furnished by city of Seattle. Figures herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,758 acre-ft (12.0 hm³) June 13, 1974, elevation, 880.00 ft (268.224 m); minimum since normal low operating level was reached in December 1960, 1,551 acre-ft (1.91 hm³) July 20, 1965, elevation, 819.40 ft (249.753 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, unknown June 29, elevation, unknown; minimum, 6,513 acre-ft (8.03 hm³) Aug. 27, elevation, 865.79 ft (263.893 m).

12191600 BAKER LAKE.--Lat 48°38'58", long 121°41'22", in SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi (0.5 km) upstream from Sulphur Creek, 8.0 mi (12.9 km) north of Concrete, and at mile 9.3 (15.0 km). DRAINAGE AREA, 215 mi² (557 km²). PERIOD OF RECORD, July 1959 to current year. GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage, 220,630 acre-ft (272 hm³) between elevations 724 ft (220.7 m) normal full pool, and 655 ft (199.6 m), minimum operating pool. Dead storage below elevation 655 ft (199.6 m), 64,840 acre-ft (79.9 hm³). Crest of spillway is at elevation 694 ft (211.5 m). Water used by Puget Sound Power and Light Co. for power development. Capacity table furnished by Puget Sound Power and Light Co. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft (355 hm³) July 12, 1972, elevation, 724.49 ft (220.825 m); minimum since normal high operating level was reached in August 1960, 102,621 acre-ft (127 hm³) May 8, 1977, elevation, 674.81 ft (205.682 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 286,123 acre-ft (353 hm³) Sept. 2, elevation, 724.13 ft (220.715 m); minimum, 103,175 acre-ft (127 hm³) Apr. 21, elevation, 675.04 ft (205.752 m).

12193000 LAKE SHANNON.--Lat 48°32'53", long 121°44'22", in SW¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi (1.1 km) north of Concrete and at mile 1.2 (1.9 km). DRAINAGE AREA, 297 mi² (769 km²). PERIOD OF RECORD, November 1925 to current year. GAGE, water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to March 1959, at datum 1.72 ft ;(0.524 m) lower.

Reservoir is formed by concrete arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft (176 hm³) between elevations 355 ft (108.20 m), minimum operating pool, and 438.6 ft (133.69 m), normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft (129.51 m). Water used by Puget Sound Power and Light Co. for power development. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Power and Light Co. from powerplant log. Figures given herein represent contents above elevation 341.7 ft (104.15 m), center line of outlet tunnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft (199 hm³) Sept. 17, 1968, elevation, 439.50 ft (133.960 m); minimum since October 1953, 28,260 acre-ft (34.8 hm³) Mar. 6, 1969, elevation, 363.7 ft (110.86 m), not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 159,554 acre-ft (197 hm³) July 31, elevation, 438.64 ft (133.697 m); minimum, 99,931 acre-ft (123 hm³) Apr. 14, elevation, 408.62 ft (124.547 m).

Reservoirs in Skagit River basin--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	12176500 Diablo Reservoir			12177700 Gorge Reservoir		
Sept. 30	1,201.19	85,561	-----	871.71	7,722	-----
Oct. 31	1,202.55	86,760	+1,199	872.66	7,936	+214
Nov. 30	1,199.98	84,499	-2,261	872.54	7,909	-27
Dec. 31	1,202.53	86,742	+2,243	873.74	8,186	+277
CAL YR 1977	-----	-----	+1,551	-----	-----	+404
Jan. 31	1,200.44	84,901	-1,841	873.60	8,154	-32
Feb. 28	1,198.00	82,789	-2,112	873.96	8,238	+84
Mar. 31	1,202.30	86,538	+3,749	874.38	8,337	+99
Apr. 30	1,198.37	83,107	-3,431	872.16	7,822	-515
May 31	1,200.31	84,786	+1,679	873.68	8,172	+350
June 30	1,201.40	85,746	+960	877.74	9,167	+995
July 31	1,205.59	89,487	+3,741	873.80	8,200	-967
Aug. 31	1,202.92	87,090	-2,397	873.69	8,175	-25
Sept. 30	1,203.02	87,179	+89	873.26	8,075	-100
WTR YR 1978	-----	-----	+1,618	-----	-----	+353
	12191600 Baker Lake			12193000 Lake Shannon		
Sept. 30	722.61	278,593	-----	435.35	152,353	-----
Oct. 31	713.96	237,807	-40,786	433.69	148,790	-3,563
Nov. 30	709.00	216,070	-21,737	436.72	155,330	+6,540
Dec. 31	693.47	156,726	-59,344	432.97	147,257	-8,073
CAL YR 1977	-----	-----	-118,381	-----	-----	+8,936
Jan. 31	680.04	115,975	-40,751	423.04	127,057	-20,200
Feb. 28	680.45	117,087	+1,112	411.13	104,597	-22,460
Mar. 31	683.12	124,504	+7,417	420.90	122,897	+18,300
Apr. 30	681.04	118,691	-5,813	410.55	103,518	-19,379
May 31	700.93	183,548	+64,857	419.86	120,909	+17,391
June 30	721.10	271,211	+87,663	428.91	138,790	+17,881
July 31	724.02	285,572	+14,361	438.60	159,465	+20,675
Aug. 31	723.77	284,331	-1,241	437.90	157,918	-1,547
Sept. 30	721.83	274,766	-9,565	436.44	154,719	-3,199
WTR YR 1978	-----	-----	-3,827	-----	-----	+2,366

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW¼NW¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank just upstream from fish barrier, 0.2 mi (0.3 km) northeast of Concrete, 0.3 mi (0.5 km) downstream from Baker River powerplant, and at mile 0.7 (1.1 km).

DRAINAGE AREA.--297 mi² (769 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1286: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi (0.3 km) downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft (213 m) upstream at datum 172.6 ft (52.61 m) National Geodetic Vertical Datum of 1929 (from river-profile survey). Jan. 23, to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft (12 m) downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--Water-discharge records good except those below 300 ft³/s (8.50 m³/s) which are fair. No diversions which are not returned to river above gage. Flow completely regulated by Baker River powerplants and Baker and Shannon Lakes (see stations 12191600 and 12193000).

AVERAGE DISCHARGE.--39 years (water years 1911-14, 1944-78), 2,677 ft³/s (75.81 m³/s) 1,939,000 acre-ft/yr (2,390 hm³/yr), adjusted for storage in Lake Shannon since November 1925, and Baker Lake since July 1959.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s (1,040 m³/s) Nov. 19, 1962, elevation, 186.6 ft (56.88 m), computation of peak flow over dam; minimum daily, 30 ft³/s (0.85 m³/s) Mar. 21-26, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,700 ft³/s (473 m³/s) Dec. 14, elevation, 180.41 ft (54.989 m); minimum daily, 45 ft³/s (1.27 m³/s) June 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	531	3620	3970	4030	2500	872	2000	576	2830	3010	2620	7100
2	633	3990	9220	4030	2930	674	3120	481	3100	3090	2580	9050
3	431	4010	9500	4010	2920	811	3120	567	2980	3100	3210	3990
4	74	4030	5640	4010	2990	635	3670	759	2010	3150	2460	3950
5	384	4020	3960	4010	2990	123	3960	1650	2920	3710	2100	3950
6	1700	4030	3950	4020	2990	1700	3950	131	2950	2190	2010	3730
7	946	4040	3980	4030	2990	1940	3920	131	3000	1380	2130	3390
8	1660	4040	4020	4050	2980	1520	1780	1180	2960	143	1850	2590
9	78	4040	4030	4050	2990	1330	2930	2730	1730	145	1830	2820
10	1380	4040	4030	4040	3010	1360	3670	1580	377	1480	2180	3050
11	317	4050	4060	3330	3040	1580	3470	139	140	2110	3140	3950
12	897	4050	6260	4030	3080	1470	3030	125	2480	634	1030	3750
13	2230	4050	8280	4040	1710	1720	2550	129	1800	298	955	2540
14	2010	4060	12400	4010	721	786	1840	137	1300	1660	1510	1950
15	2000	4050	7610	4000	1030	594	732	2090	2560	1980	3150	1550
16	3060	3870	4920	3700	759	508	1100	2410	1470	3280	3390	2210
17	2970	3940	4010	4020	1220	2080	1550	2220	687	3430	2840	2020
18	2000	3920	4010	4010	122	1820	467	888	699	3040	2630	2810
19	2210	3840	4000	3980	122	1780	582	1820	766	1800	2040	1680
20	3260	3350	4020	1750	1940	1810	1560	283	45	1840	1990	1950
21	3250	3180	4020	72	1540	1800	1650	273	45	2010	1960	2040
22	3230	1850	4010	75	1070	1600	859	2460	50	2530	1490	2910
23	3220	2130	4020	2060	821	2170	131	1410	69	2550	1620	3990
24	3490	3290	4010	1170	1740	2910	775	760	70	2950	1130	3990
25	3940	3800	4010	2560	1800	2940	675	1280	69	3150	1720	3990
26	3940	4020	4020	1750	1720	2930	792	2210	1150	2030	1670	2920
27	3500	4030	4030	2900	1520	2930	2110	1080	2330	2820	1800	2850
28	3270	4050	4030	1320	1020	3010	562	571	2790	2150	774	2200
29	3190	4050	4010	1740	---	3090	1520	259	3940	1370	1780	2420
30	3250	3990	4010	1930	---	3100	2280	2190	2760	872	1380	905
31	3240	---	4010	2250	---	3230	---	2940	---	1040	2390	---
TOTAL	66291	113430	156050	94977	54265	54823	60355	35459	50077	64942	63359	96245
MEAN	2138	3781	5034	3064	1938	1768	2012	1144	1669	2095	2044	3208
MAX	3940	4060	12400	4050	3080	3230	3960	2940	3940	3710	3390	9050
MIN	74	1850	3950	72	122	123	131	125	45	143	774	905
AC-FT	131500	225000	309500	188400	107600	108700	119700	70330	99330	128800	125700	190900
†	-44,349	-15,197	-67,417	-60,951	-21,348	+25,717	-25,192	+82,248	+105,544	+35,036	-2,788	-12,764
MEAN‡	1,417	3,527	3,936	2,072	1,553	2,186	1,589	2,481	3,444	2,664	1,999	2,994
AC-FT‡	87,151	209,803	242,083	127,449	86,252	134,417	94,508	152,578	204,874	163,836	122,912	178,136

CAL YR 1977: TOTAL 900,150 MEAN 2,466 MAX 12,400 MIN 70 AC-FT 1,785,000
DO.....: MEAN‡ 2,314 AC-FT‡ 1,675,555
WTR YR 1978: TOTAL 910,273 MEAN 2,494 MAX 12,400 MIN 45 AC-FT 1,806,000
DO.....: MEAN‡ 2,493 AC-FT‡ 1,804,539

† Change in contents, in acre-feet, in Baker Lake and Lake Shannon.
‡ Adjusted for change in contents in Baker Lake and Lake Shannon.

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at old highway bridge 0.2 mi (0.3 km) downstream from gaging station.

PERIOD OF RECORD.--Water years 1962-65, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW (CFS)	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)
OCT , 1977										
04...	1130	--	74	60	7.0	9.5	5	3	12.0	21
NOV										
29...	1135	--	4050	56	6.9	8.1	40	8	11.5	22
DEC										
20...	1140	--	4000	56	7.4	5.5	25	16	12.7	23
JAN , 1978										
17...	1245	--	4050	53	7.1	4.2	15	5	12.9	20
FEB										
22...	1100	--	2920	56	7.2	4.9	30	6	12.7	23
MAR										
07...	1225	--	2840	60	7.4	5.1	15	6	12.7	30
APR										
04...	1215	--	3950	64	7.2	6.0	15	4	12.1	24
MAY										
02...	1200	--	134	66	7.0	8.0	15	3	11.8	26
JUN										
20...	1210	45	--	65	7.2	8.8	15	4	12.1	30
JUL										
18...	1040	--	3040	48	7.1	12.5	15	3	11.3	20
AUG										
08...	1115	--	2820	41	7.2	14.0	5	3	10.7	23
SEP										
19...	1220	--	2910	40	7.0	13.6	5	9	9.7	17

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)
OCT , 1977										
04...	4	7.0	.9	1.3	11	.1	.5	21	0	17
NOV										
29...	10	6.8	1.2	1.0	9	.1	.6	15	0	12
DEC										
20...	9	7.2	1.1	1.0	9	.1	.5	16	0	13
JAN , 1978										
17...	5	6.3	1.0	1.2	11	.1	.5	18	0	15
FEB										
22...	8	7.3	1.2	1.0	8	.1	.5	19	0	16
MAR										
07...	12	9.8	1.2	1.1	7	.1	.6	21	0	17
APR										
04...	8	7.8	1.1	1.0	8	.1	.6	20	0	16
MAY										
02...	9	8.0	1.5	1.6	12	.1	.5	21	0	17
JUN										
20...	10	10	1.2	1.5	10	.1	.5	24	0	20
JUL										
18...	5	6.2	1.1	1.4	13	.1	.5	18	0	15
AUG										
08...	9	7.4	1.0	1.2	10	.1	.4	17	0	14
SEP										
19...	6	5.3	.8	1.1	12	.1	.4	13	0	11

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER QUALITY DATA

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT , 1977										
04...	3.4	5.5	.3	.42	.04	.01	.00	.00	90	0
NOV										
29...	3.0	16	.9	.12	.05	.01	.00	.00	--	0
DEC										
20...	1.0	8.1	.9	.14	.06	.03	.00	.00	5000	0
JAN , 1978										
17...	2.3	10	.9	.12	.05	.03	.00	.00	220	0
FEB										
22...	1.9	5.8	1.0	.14	.07	.01	.00	.00	370	0
MAR										
07...	1.3	14	1.0	.13	.04	.02	.00	.00	130	3
APR										
04...	2.0	7.9	1.1	.12	.06	.01	.00	.00	230	2
MAY										
02...	3.4	8.4	1.2	.08	.04	.01	.00	.00	30	0
JUN										
20...	2.4	10	.9	.11	.06	.01	.00	.00	170	1
JUL										
18...	2.3	5.9	.8	.06	.05	.01	.00	.00	150	1
AUG										
08...	1.7	6.3	.7	.04	.02	.00	.00	.00	150	1
SEP										
19...	2.1	8.2	.7	.03	.06	.02	.00	.00	640	0

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT , 1977									
04...	0	0	1	250	5	.0	0	0	10
NOV									
29...	0	0	1	--	12	.0	0	0	10
DEC									
20...	0	0	3	8700	4	.1	0	0	0
JAN , 1978									
17...	7	10	0	350	64	.0	0	0	10
FEB									
22...	1	0	2	500	4	.0	0	0	10
MAR									
07...	0	0	1	410	4	.0	2	0	0
APR									
04...	0	0	0	490	4	.0	0	0	0
MAY									
02...	1	0	1	250	4	.0	0	0	5
JUN									
20...	2	0	2	220	11	.1	0	0	10
JUL									
18...	<1	0	1	40	11	.0	0	0	<3
AUG									
08...	0	0	3	240	4	.0	0	0	10
SEP									
19...	<1	0	0	630	0	.0	0	0	<3

12194000 SKAGIT RIVER NEAR CONCRETE, WA

LOCATION.--Lat 48°31'28", long 121°46'11", in SE¼NE¼ sec.16, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110007, on right bank at Dalles Bridge 1.3 mi (2.1 km) southwest of Concrete, 2.4 mi (3.9 km) downstream from Baker River, and at mile 54.1 (87.0 km).

DRAINAGE AREA.--2,737 mi² (7,089 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-- September 1924 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1736: 1948. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 130.0 ft (39.62 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 10, 1924, nonrecording gage 200 ft (61 m) upstream and Dec. 10, 1924, to Sept. 30, 1937, water-stage recorder at present site; both gages at datum 12.7 ft (3.87 m) higher.

REMARKS.--Water-discharge records excellent. Flow regulated for powerplants on Baker and upper Skagit Rivers, by Ross Reservoir (see sta 12175000), and by Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000).

AVERAGE DISCHARGE.--54 years, 15,190 ft³/s (430.2 m³/s), 11,010,000 acre-ft/yr (13,600 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154,000 ft³/s (4,360 m³/s) Nov. 27, 1949, gage height, 40.8 ft (12.44 m); minimum probably less than 2,160 ft³/s (61.2 m³/s) during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 ft³/s (73.9 m³/s) Nov. 14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of 69.3 ft (21.12 m), present datum, at site 200 ft (61 m) upstream, from floodmarks, discharge about 500,000 ft³/s (14,160 m³/s). Records of other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70,300 ft³/s (1,990 m³/s) Dec. 2, gage height, 29.27 ft (8.921 m); minimum, 4,100 ft³/s (116 m³/s) Oct. 12, gage height, 13.61 ft (4.148 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5160	16200	24000	14900	12100	11200	15000	9350	15300	24900	14700	19300
2	4780	34900	57800	14400	12800	10000	14800	8620	20000	27000	15300	26200
3	4840	18100	48000	15300	14600	10100	14100	8980	23700	26000	15300	15200
4	4250	14500	30700	17700	12900	8930	12900	8810	26600	24100	14900	14000
5	4450	12900	25000	18300	11700	6800	13300	8460	29600	23100	13600	14200
6	5570	12100	22400	18500	13800	10200	13500	6920	28200	19600	11600	15400
7	4960	12600	22900	16500	15100	12000	11900	6900	26000	19500	11900	14700
8	5600	11700	20800	20200	15100	13800	9320	8880	24100	18300	11300	13000
9	4710	11400	20400	19900	14500	11000	9990	11400	24200	18200	11800	12600
10	5560	15900	22700	18500	14700	11500	10800	12200	20200	18400	11600	14500
11	4400	16500	40800	17000	13400	11700	11500	10600	15300	16000	12800	15900
12	4910	15300	40000	16300	13400	10500	11300	10200	17500	12300	9630	14700
13	6890	14700	38700	15300	12200	10500	10300	11300	18200	13300	7970	13100
14	6600	17700	53700	14900	10700	11200	9000	14300	16200	16500	8860	11900
15	6040	16400	39000	13900	11500	9920	8120	15200	16400	16700	13400	10700
16	7160	14600	31000	14500	10300	8760	9000	14400	14500	19400	14500	11600
17	7030	13500	25200	15000	11300	9660	9110	12800	11900	20300	12600	11200
18	5870	12500	22700	14200	7090	8430	7790	10800	13100	18700	11900	12300
19	5900	11600	21000	13100	6430	8260	7310	12900	15200	17000	11100	9690
20	6850	10600	18800	10800	8640	9260	9120	14800	17800	16100	11200	9190
21	6770	12400	17000	9890	9880	8820	9910	17200	19400	14600	10300	9210
22	6690	10400	16100	11300	9350	10400	9700	16800	19700	16400	9180	14600
23	6940	10400	15700	13400	11700	11800	7980	13400	16200	18500	9140	24300
24	7810	10200	15200	12000	13500	15800	7740	10900	13000	17400	8950	18500
25	11800	15800	13900	13600	13200	18100	7050	10200	11600	17700	11300	16000
26	11300	49200	13500	13100	13000	20600	8280	10800	12100	15600	10500	13500
27	9550	25700	14900	14200	12600	20100	12700	10200	15500	18400	8810	13300
28	8490	24600	15200	11000	11800	20200	12700	11800	21800	15500	5950	13200
29	8630	28700	16100	11100	---	18500	11900	10700	28700	12900	7070	14100
30	10100	24100	16000	11300	---	17800	11300	12100	27200	9470	8720	11600
31	10800	---	15300	11500	---	18600	---	13900	---	9920	11400	---
TOTAL	210410	515200	794500	451590	337290	384460	317420	355820	579200	551790	347280	427690
MEAN	6787	17170	25630	14570	12050	12400	10580	11480	19310	17800	11200	14260
MAX	11800	49200	57800	20200	15100	20600	15000	17200	29600	27000	15300	26200
MIN	4250	10200	13500	9890	6430	6800	7050	6900	11600	9470	5950	9190
AC-FT	417300	1022000	1576000	895700	669000	762600	629600	705800	1149000	1094000	688800	848300

CAL YR 1977 TOTAL 4650930 MEAN 12740 MAX 57800 MIN 4250 AC-FT 9225000
WTR YR 1978 TOTAL 5272650 MEAN 14450 MAX 57800 MIN 4250 AC-FT 10460000

12194000 SKAGIT RIVER NEAR CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 350 ft (107 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT , 1977												
04...	1200	4240	56	7.1	9.5	0	2	12.2	22	1	7.0	1.1
NOV												
29...	1200	31500	45	7.0	6.4	40	28	12.7	22	11	7.3	1.0
DEC												
20...	1210	18200	62	7.1	4.2	15	11	12.5	26	5	7.9	1.4
JAN , 1978												
17...	1335	15000	66	7.3	4.7	10	2	13.0	27	5	8.3	1.4
FEB												
22...	1130	10900	67	7.4	5.2	15	2	13.3	30	7	9.5	1.4
MAR												
07...	1305	12200	72	7.4	5.1	10	3	13.1	31	7	10	1.4
APR												
04...	1300	12900	64	7.3	6.3	15	2	12.2	24	3	7.7	1.1
MAY												
02...	1225	8300	57	7.2	8.2	15	3	11.8	24	5	6.9	1.7
JUN												
20...	1255	17900	40	7.3	10.2	15	4	11.2	19	4	6.4	.6
JUL												
18...	1120	18800	41	7.3	11.8	10	6	11.8	18	2	5.7	.9
AUG												
08...	1145	11000	45	7.3	14.4	15	25	11.4	19	3	6.2	.8
SEP												
19...	1315	10300	46	7.0	11.0	0	4	11.0	20	3	6.3	1.0

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1977												
04...	1.2	10	.1	.7	26	0	21	3.3	2.4	.3	.05	.03
NOV												
29...	.7	6	.1	.6	14	0	11	2.2	14	.8	.15	.16
DEC												
20...	.9	7	.1	.6	25	0	21	3.2	5.4	.7	.15	.04
JAN , 1978												
17...	1.0	7	.1	.6	26	0	21	2.1	7.2	.8	.14	.05
FEB												
22...	.8	5	.1	.6	27	0	22	1.7	4.9	.8	.10	.04
MAR												
07...	.9	6	.1	.6	29	0	24	1.8	4.8	.8	.10	.03
APR												
04...	.9	7	.1	.7	25	0	21	2.0	5.6	1.0	.11	.06
MAY												
02...	1.3	10	.1	.6	24	0	20	2.4	5.7	1.0	.06	.02
JUN												
20...	.7	7	.1	.5	18	0	15	1.4	5.6	.5	.05	.06
JUL												
18...	1.0	10	.1	.5	19	0	16	1.5	3.3	.5	.05	.05
AUG												
08...	2.0	18	.2	.5	20	0	16	1.6	3.6	.6	.06	.08
SEP												
19...	1.1	10	.1	.5	20	0	16	3.2	5.0	.8	.06	.06

12194000 SKAGIT RIVER NEAR CONCRETE, WA--Continued

WATER QUALITY DATA

DATE	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	ARSENIC DISSOLVED (UG/L AS AS)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1977												
04...	.00	.00	.00	0	0	4	2	5	.0	0	0	10
NOV												
29...	.08	.00	.00	1	0	0	1	4	.1	0	0	0
DEC												
20...	.02	.00	.00	1	1	0	1	9	.2	0	0	0
JAN , 1978												
17...	.02	.00	.00	1	0	0	0	4	.0	0	0	20
FEB												
22...	.01	.00	.00	1	0	10	1	2	.0	0	0	10
MAR												
07...	.01	.00	.00	0	0	0	4	3	.0	2	0	0
APR												
04...	.01	.00	.00	2	0	0	0	1	.0	0	0	10
MAY												
02...	.01	.00	.00	0	0	0	0	2	.1	0	0	0
JUN												
20...	.02	.00	.00	2	0	0	2	9	.4	0	0	0
JUL												
18...	.02	.00	.00	1	<1	0	1	10	.0	0	0	<3
AUG												
08...	.04	.00	.00	1	0	0	1	5	.0	0	0	10
SEP												
19...	.02	.00	.00	1	<1	10	0	0	.0	0	0	<3

12197040 TANK CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'38", long 122°06'19", in NW¼NE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 350 ft (107 m) upstream from State Highway 20 crossing, and 2 mi (3.2 km) west of Lyman.

DRAINAGE AREA.--About 2.5 mi² (6.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30 m) from topographic map.

REMARKS.--Water-discharge records fair. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113 ft³/s (3.20 m³/s) Dec. 2, 1977, gage height, 4.98 ft (1.518 m); no flow several days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 113 ft³/s (3.20 m³/s) Dec. 2, gage height, 4.98 ft (1.518 m); no flow Aug. 5-11, 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	2.8	51	2.2	4.5	1.6	2.4	1.1	.68	.03	.04	2.9
2	.12	2.1	55	2.0	5.5	1.4	2.4	1.1	.59	.23	.03	2.2
3	.11	.99	17	4.3	4.5	1.4	2.0	1.0	.51	.11	.02	.89
4	.10	.66	13	4.5	3.8	1.3	2.0	1.4	.51	.08	.01	1.1
5	.05	.75	8.6	4.5	3.4	1.4	2.0	1.1	.44	.05	.00	.78
6	.06	1.3	8.4	4.0	2.9	1.3	1.8	1.0	.38	.03	.00	.78
7	.16	1.6	6.2	5.0	2.9	1.3	1.6	.89	.38	.02	.00	.44
8	.14	1.2	5.0	7.0	2.7	1.3	1.6	.78	.38	.02	.00	1.1
9	.14	3.7	4.6	5.0	2.9	1.3	1.4	.89	1.1	.14	.00	.89
10	.11	2.1	7.8	4.8	2.7	1.1	1.8	.89	1.0	.44	.00	.89
11	.10	2.1	13	4.0	2.4	1.8	2.0	2.9	1.4	.51	.00	.68
12	.14	2.0	14	3.6	2.2	1.6	1.6	2.4	.89	.38	.44	.38
13	.25	1.1	17	3.1	2.0	2.4	1.6	1.8	1.0	.33	.10	.29
14	.17	4.3	20	3.1	2.4	3.1	1.6	2.2	.68	.29	.29	.23
15	.13	1.6	19	2.7	3.1	2.2	1.6	3.1	.68	.29	1.6	.29
16	.11	2.0	18	2.4	2.2	1.6	3.8	2.9	.59	.33	.44	.78
17	.11	2.3	11	2.2	2.0	1.4	2.4	1.8	.44	.33	.20	1.3
18	.12	1.3	8.3	2.0	2.2	1.6	2.2	1.4	.38	.29	.14	.44
19	.16	.89	7.2	1.8	2.0	1.3	2.0	1.1	.23	.23	.16	.26
20	.13	.78	6.1	1.8	1.8	1.3	1.8	.89	.26	.14	.10	.23
21	.11	.69	5.4	5.0	1.8	1.3	2.2	.89	.26	.12	.06	.51
22	.10	.68	4.9	5.8	1.6	1.1	2.9	1.6	.29	.07	.04	2.2
23	.33	1.7	4.4	3.8	2.2	1.3	2.2	1.3	.33	.03	.02	1.8
24	.49	1.9	3.9	3.4	1.6	1.3	1.6	1.0	.33	.01	.01	.78
25	.69	10	3.6	3.4	1.8	3.8	1.6	1.0	.38	.01	.01	.59
26	.51	5.6	3.4	3.6	1.8	3.1	1.4	1.0	.38	.38	.00	.51
27	.30	8.4	3.1	3.1	1.6	3.6	2.0	1.4	.33	.38	.00	.51
28	.24	27	3.1	2.9	1.8	4.8	1.8	1.4	.33	.16	.00	.51
29	.33	24	3.5	2.7	---	3.8	1.4	1.0	.29	.14	.00	.51
30	.78	12	2.9	2.7	---	3.4	1.3	.89	.26	.10	.00	.59
31	.54	---	2.4	2.9	---	2.9	---	.78	---	.07	.18	---
TOTAL	6.96	127.54	350.8	109.3	72.3	61.9	58.0	42.90	15.70	5.74	3.89	25.36
MEAN	.22	4.25	11.3	3.53	2.58	2.00	1.93	1.38	.52	.19	.13	.85
MAX	.78	27	55	7.0	5.5	4.8	3.8	3.1	1.4	.51	1.6	2.9
MIN	.05	.66	2.4	1.8	1.6	1.1	1.3	.78	.23	.01	.00	.23
AC-FT	14	253	696	217	143	123	115	85	31	11	7.7	50

CAL YR 1977 TOTAL 967.22 MEAN 2.65 MAX 55 MIN .00 AC-FT 1920
WTR YR 1978 TOTAL 880.39 MEAN 2.41 MAX 55 MIN .00 AC-FT 1750

12197040 TANK CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1974 to current year.

INSTRUMENTATION.--Temperature recorder since Apr. 24, 1974.

REMARKS.--Interruptions in the record during periods of no flow at gage Aug. 5-11, 26-30.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Sept. 2, 1974; minimum, 0.0°C Nov. 21, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.0°C July 23, Aug. 4; minimum, 0.0°C Nov. 21.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.0	10.0	10.5	10.0	7.0	8.5	6.5	6.0	6.0	2.0	1.5	2.0
2	10.5	7.0	9.0	8.5	7.0	8.0	8.0	6.5	7.5	1.5	.5	1.0
3	10.0	6.0	8.0	7.0	6.0	6.5	7.5	6.5	7.5	2.5	2.0	2.0
4	9.5	6.0	7.5	7.5	6.5	7.0	6.5	6.0	6.5	4.5	3.0	3.5
5	10.0	6.5	8.0	8.5	7.0	7.5	6.5	5.5	6.0	5.0	4.0	4.5
6	9.5	8.0	8.5	8.0	7.5	7.5	6.5	5.0	5.5	4.5	4.0	4.0
7	11.5	8.5	9.5	7.5	5.5	6.5	6.5	5.5	6.0	4.5	4.0	4.0
8	10.5	9.5	10.0	5.5	5.0	5.5	5.5	5.5	5.5	6.0	5.0	5.5
9	10.0	8.5	9.5	7.5	5.0	6.0	5.5	5.0	5.0	6.5	6.0	6.0
10	9.0	7.0	8.0	9.0	7.5	8.5	7.0	5.0	6.0	6.0	6.0	6.0
11	10.5	7.0	8.5	9.5	8.5	9.0	7.0	6.5	7.0	6.0	6.0	6.0
12	10.0	8.5	9.0	8.5	8.0	8.5	7.0	7.0	7.0	6.0	6.0	6.0
13	11.0	8.5	9.5	8.5	8.0	8.5	7.5	6.5	7.0	6.5	5.5	6.0
14	10.0	6.5	8.0	8.5	7.5	8.0	8.0	8.0	8.0	7.0	6.5	7.0
15	11.5	8.0	9.5	8.0	7.0	7.5	8.0	7.0	7.5	7.0	6.5	7.0
16	11.5	9.5	10.5	7.5	7.0	7.5	8.0	7.5	7.5	7.0	6.5	6.5
17	10.0	7.5	8.5	6.5	4.5	6.0	7.5	7.0	7.0	7.0	6.0	6.5
18	9.0	7.0	8.0	4.0	3.0	3.5	7.0	7.0	7.0	7.0	6.5	6.5
19	10.5	8.0	9.0	3.5	2.5	2.5	7.0	6.5	6.5	8.0	7.0	7.0
20	9.0	6.5	7.5	2.5	1.0	2.0	6.5	6.0	6.0	8.0	7.5	7.5
21	10.0	8.0	8.5	1.0	.0	.5	6.5	6.0	6.5	7.5	6.0	7.0
22	11.0	9.5	10.5	1.5	.5	1.0	6.5	6.0	6.5	7.5	6.0	6.5
23	11.0	10.0	11.0	3.0	1.5	2.0	6.0	5.0	5.5	6.5	6.0	6.0
24	11.0	9.5	10.0	5.0	3.0	4.0	5.0	5.0	5.0	6.5	5.5	6.0
25	10.5	9.0	9.5	7.0	4.5	6.0	5.0	4.5	5.0	6.5	6.0	6.0
26	9.5	8.5	9.0	7.0	6.0	6.5	4.5	4.0	4.0	7.0	6.0	6.5
27	9.5	8.0	8.5	6.5	6.0	6.0	3.5	3.0	3.5	6.0	5.5	6.0
28	9.5	8.5	9.0	7.0	6.5	6.5	4.0	3.0	3.5	6.5	6.0	6.0
29	10.0	9.5	9.5	7.5	6.5	7.0	5.0	4.0	4.5	6.5	5.5	6.0
30	9.5	8.5	9.0	6.5	6.0	6.5	5.0	4.0	4.5	5.5	4.5	5.0
31	8.5	8.0	8.0	---	---	---	4.0	2.0	3.0	5.5	4.5	5.0
MONTH	11.5	6.0	9.0	10.0	.0	6.0	8.0	2.0	6.0	8.0	.5	5.5

12197040 TANK CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.0	5.0	6.5	4.5	5.5	9.0	8.5	9.0	10.5	8.0	9.5
2	6.0	5.0	5.5	6.0	4.0	5.0	9.0	8.5	8.5	10.0	9.5	10.0
3	7.0	6.0	6.5	6.0	4.0	5.0	10.0	8.5	9.0	10.0	8.5	9.0
4	7.5	6.5	7.0	7.0	5.0	6.0	9.0	9.0	9.0	9.5	8.5	9.0
5	8.0	7.5	8.0	7.5	5.5	6.5	9.0	8.0	8.5	10.0	7.0	8.5
6	8.5	8.0	8.0	7.5	6.5	7.0	9.0	7.0	8.0	11.0	7.0	9.0
7	8.0	7.5	8.0	8.0	7.5	7.5	9.5	7.0	8.5	12.0	8.0	10.0
8	8.0	7.0	7.5	9.0	7.5	8.0	9.0	8.0	8.5	12.0	8.0	10.0
9	7.5	6.5	7.0	9.5	7.5	8.5	10.0	8.0	9.0	11.0	10.0	10.5
10	7.0	5.5	6.0	8.0	6.0	7.0	10.5	8.5	9.5	10.5	9.5	10.0
11	6.0	5.0	5.5	7.5	7.0	7.5	9.5	8.5	9.0	10.0	9.0	9.5
12	5.5	4.5	5.0	7.5	6.0	7.0	9.0	7.5	8.5	10.0	8.5	9.5
13	6.5	5.0	5.5	7.5	6.5	7.0	8.5	7.5	8.0	10.0	9.5	9.5
14	7.0	6.0	6.5	7.0	6.0	6.5	9.5	7.5	8.5	10.0	9.5	9.5
15	7.5	6.0	6.5	8.0	5.5	6.5	9.5	8.0	9.0	10.0	9.5	9.5
16	6.5	5.0	5.5	9.0	7.5	8.0	9.0	7.5	8.0	10.5	9.5	10.0
17	6.5	5.0	6.0	8.5	7.0	8.0	9.5	7.5	8.5	10.5	9.5	10.0
18	7.5	6.5	7.0	9.5	8.0	9.0	11.0	8.5	9.5	11.0	9.0	10.0
19	8.5	7.5	8.0	10.0	8.0	9.0	9.5	9.0	9.5	12.5	10.0	11.0
20	8.0	6.5	7.0	9.5	7.5	8.5	9.5	8.5	9.0	15.0	11.0	12.5
21	9.0	7.5	8.0	10.0	7.5	9.0	9.5	8.5	9.0	12.0	10.0	11.0
22	9.0	7.5	8.0	10.5	7.5	9.0	8.5	8.0	8.0	10.5	9.0	10.0
23	8.5	7.0	8.0	9.5	9.5	9.5	10.5	7.5	9.0	10.5	9.0	10.0
24	7.5	6.5	7.0	9.5	9.0	9.5	10.5	8.5	9.5	10.0	8.5	9.5
25	7.5	7.0	7.5	9.5	9.0	9.0	10.5	9.5	10.0	10.0	9.0	9.5
26	8.0	6.5	7.5	9.0	8.5	9.0	11.0	10.0	10.5	10.5	10.0	10.0
27	7.0	5.0	6.0	9.5	9.0	9.0	10.0	9.5	10.0	10.5	10.0	10.5
28	6.5	5.0	6.0	9.0	9.0	9.0	9.5	9.0	9.5	11.0	10.0	10.5
29	---	---	---	10.0	9.0	9.5	10.0	8.5	9.5	10.5	9.5	10.0
30	---	---	---	10.0	8.5	9.0	10.0	8.0	9.0	11.0	9.0	10.0
31	---	---	---	9.5	7.0	8.5	---	---	---	13.5	9.5	11.0
MONTH	9.0	4.5	7.0	10.5	4.0	8.0	11.0	7.0	9.0	15.0	7.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	10.5	12.5	16.5	13.0	14.5	16.5	13.0	14.5	14.5	13.5	14.0
2	15.5	11.5	13.5	15.0	13.5	14.0	18.0	13.5	15.0	15.0	14.0	14.5
3	16.0	12.0	14.0	14.0	13.0	13.5	20.0	14.0	16.0	14.5	13.5	14.0
4	16.5	12.5	14.5	13.0	12.0	12.5	21.0	13.0	16.0	13.5	13.0	13.5
5	16.5	12.5	14.5	15.0	12.0	13.5	---	---	---	13.5	12.5	13.0
6	16.0	12.5	14.0	15.5	12.0	14.0	---	---	---	13.5	12.5	13.0
7	14.5	12.5	13.5	16.5	12.5	14.5	---	---	---	13.5	11.5	12.5
8	14.5	11.5	13.0	14.0	13.5	13.5	---	---	---	13.0	12.0	12.5
9	13.0	11.5	12.0	13.5	12.5	13.0	---	---	---	14.0	13.0	13.5
10	12.0	11.0	11.5	13.0	11.5	12.0	---	---	---	13.5	13.0	13.5
11	13.0	11.5	12.0	13.5	12.0	12.5	---	---	---	13.5	12.5	13.0
12	12.0	11.5	12.0	16.0	11.5	13.5	14.5	13.5	14.0	13.5	11.0	12.0
13	12.0	11.5	11.5	17.0	12.0	14.5	15.5	12.0	13.5	13.5	11.0	12.0
14	12.0	11.0	11.5	17.0	12.5	15.0	13.5	12.5	13.0	14.0	12.0	13.0
15	11.5	10.5	11.0	16.0	13.5	15.0	13.5	13.0	13.5	14.0	12.0	13.0
16	11.5	11.5	11.5	15.0	13.0	13.5	14.0	12.5	13.0	12.5	11.0	11.5
17	14.0	10.0	12.0	15.0	12.5	13.5	15.0	13.0	14.0	11.5	10.5	11.0
18	14.0	10.5	12.0	16.5	13.0	14.5	14.0	13.5	14.0	11.0	9.0	10.0
19	14.5	10.0	12.5	17.0	12.5	15.0	14.0	13.5	14.0	12.5	8.5	10.5
20	15.0	10.5	12.5	18.0	13.5	16.0	15.5	12.0	14.0	11.5	11.0	11.5
21	15.0	11.5	13.0	18.5	14.0	16.5	16.0	13.5	14.5	12.0	11.0	11.5
22	13.5	12.0	13.0	20.0	15.0	17.0	14.5	12.5	13.0	11.5	11.0	11.5
23	14.0	11.0	12.5	21.0	15.5	17.5	14.0	13.0	13.5	12.0	11.5	11.5
24	13.0	11.5	12.0	17.5	14.0	16.0	14.5	13.5	14.0	14.0	12.0	13.0
25	12.5	11.5	12.0	20.0	13.5	16.0	15.0	13.5	14.0	14.0	11.5	12.5
26	15.0	12.0	13.5	17.0	15.5	16.0	---	---	---	15.0	12.0	13.5
27	16.5	11.5	14.0	17.5	14.5	15.5	---	---	---	14.0	13.0	13.5
28	17.5	12.5	15.0	17.5	13.0	15.0	---	---	---	13.0	12.5	13.0
29	15.0	14.0	14.0	17.5	13.0	15.5	---	---	---	15.0	12.5	13.5
30	16.0	13.5	14.5	17.5	13.0	15.5	---	---	---	14.0	12.5	13.5
31	---	---	---	16.5	12.5	14.5	17.5	14.0	16.0	---	---	---
MONTH	17.5	10.0	13.0	21.0	11.5	14.5	21.0	12.0	14.0	15.0	8.5	12.5
YEAR	21.0	.0	9.5									

12197110 MINKLER CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'15", long 122°06'00", in N½SE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 1.8 mi (2.9 km) west of Lyman and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--About 5 mi² (13.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

REVISED RECORDS.--WDR WA-77-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (24 m) from topographic map.

REMARKS.--Water-discharge records fair except those for periods of backwater from Skagit River, Nov. 2, 26, 27, 29, Dec. 1-4, 10-16, which are poor. No known diversion above station. Flow affected by natural storage in Minkler Lake

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge 150 ft³/s (4.25 m³/s) Dec. 2, 1975; maximum gage height, 10.94 ft (3.335 m) Dec. 4, 1975, backwater from Skagit River; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 96 ft³/s (2.72 m³/s) Dec. 2; maximum gage height, 7.09 ft (2.161 m) Dec. 2, backwater from Skagit River; no flow many days each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	37	5.0	5.0	2.8	5.5	2.0	.70	.15	.15	.00
2	.00	.45	96	4.4	7.4	2.7	4.6	1.5	.63	.15	.18	.00
3	.00	1.4	78	5.0	8.0	2.4	4.2	1.3	.56	.18	.18	.04
4	.00	1.6	33	6.2	7.2	2.1	3.9	1.4	.56	.12	.18	.12
5	.00	1.8	16	7.7	7.4	2.0	3.5	1.4	.50	.12	.26	.30
6	.00	2.1	13	8.0	7.4	2.1	3.1	1.1	.50	.09	.22	.45
7	.00	2.8	12	7.2	7.2	2.1	2.7	.86	.56	.06	.22	.50
8	.00	3.3	9.4	12	6.7	1.8	2.4	.63	.56	.04	.15	.63
9	.00	4.1	8.3	14	6.0	1.8	2.1	.56	.45	.09	.09	.96
10	.00	5.2	9.4	13	5.5	1.8	1.8	.56	.50	.06	.04	1.0
11	.00	8.3	26	11	4.8	1.8	2.3	1.5	.50	.06	.00	1.2
12	.00	11	31	8.9	4.4	1.8	2.0	4.4	.50	.06	.00	1.4
13	.00	10	33	8.0	4.0	2.1	2.0	3.9	.50	.04	.00	1.3
14	.00	12	47	8.3	3.9	3.0	1.8	4.1	.50	.04	.00	1.2
15	.00	12	41	7.7	4.2	3.3	1.7	6.0	.56	.04	.00	1.1
16	.00	11	35	7.2	4.2	2.5	2.8	7.7	.50	.06	.00	1.3
17	.00	11	20	6.2	4.0	2.4	4.2	5.5	.50	.12	.02	1.2
18	.00	11	14	5.2	3.9	2.7	4.1	4.1	.45	.12	.04	1.3
19	.00	9.1	11	4.6	3.9	2.8	4.2	2.8	.45	.12	.06	1.2
20	.00	7.7	10	4.4	3.7	2.7	3.5	2.1	.40	.12	.09	1.1
21	.00	6.9	10	5.7	3.7	2.1	3.5	1.5	.40	.12	.06	1.1
22	.00	6.0	9.1	9.4	3.7	1.8	4.2	1.8	.35	.12	.04	1.7
23	.00	5.7	8.3	8.0	3.5	1.5	4.2	2.1	.30	.12	.00	2.4
24	.00	6.0	7.4	7.2	3.3	1.5	3.9	1.6	.26	.15	.00	2.8
25	.00	7.7	6.7	6.2	3.3	2.8	3.3	1.3	.22	.09	.00	2.8
26	.00	29	6.4	6.0	3.0	6.4	2.5	1.1	.22	.09	.00	2.4
27	.00	18	6.0	6.0	2.8	6.4	2.7	1.2	.15	.12	.00	2.1
28	.00	35	5.7	5.7	2.7	8.6	3.7	1.3	.12	.15	.00	1.7
29	.00	54	6.4	5.0	---	9.7	3.0	1.2	.15	.15	.00	1.5
30	.00	34	5.5	5.2	---	8.0	2.4	1.0	.15	.15	.00	1.3
31	.00	---	5.2	4.8	---	6.2	---	.77	---	.15	.00	---
TOTAL	.00	328.15	656.8	223.2	134.8	101.7	95.8	68.28	12.70	3.25	1.98	36.10
MEAN	.000	10.9	21.2	7.20	4.81	3.28	3.19	2.20	.42	.10	.064	1.20
MAX	.00	54	96	14	8.0	9.7	5.5	7.7	.70	.18	.26	2.8
MIN	.00	.00	5.2	4.4	2.7	1.5	1.7	.56	.12	.04	.00	.00
AC-FT	.00	651	1300	443	267	202	190	135	25	6.4	3.9	72

WTR YR 1978 TOTAL 1662.76 MEAN 4.56 MAX 96 MIN .00 AC-FT 3300

CAL YR 1977 TOTAL 1995.65 MEAN 5.47 MAX 96 MIN .00 AC-FT 3960

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1974 to current year.

INSTRUMENTATION.--Temperature recorder since May 17, 1974.

REMARKS.--Record during period of no flow Oct. 1-Nov. 1 and Aug. 11-16, 23 to Sept. 2 were not published; other interruptions due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C June 7, 1977; minimum, 1.0°C Nov. 30, 1975.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 16.5°C May 20; minimum recorded, 3.0°C Dec. 9, 10.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1				---	---	---	---	---	---	4.5	4.0	4.0
2				9.0	7.5	8.0	6.5	5.0	5.5	4.5	4.0	4.0
3				7.5	7.0	7.5	6.5	6.0	6.5	4.5	4.0	4.0
4				7.0	6.5	7.0	6.5	5.5	6.0	4.0	3.5	3.5
5				---	---	---	---	---	---	3.5	3.5	3.5
6				---	---	---	4.5	4.0	4.0	4.0	3.5	3.5
7				---	---	---	4.5	4.0	4.5	4.0	3.5	3.5
8				---	---	---	4.0	4.0	4.0	4.0	3.5	3.5
9				---	---	---	3.5	3.0	3.5	5.5	4.5	5.0
10				---	---	---	4.5	3.0	3.5	6.0	5.5	5.5
11				---	---	---	5.5	4.5	5.0	5.5	5.5	5.5
12				---	---	---	6.0	5.5	6.0	5.5	5.0	5.0
13				---	---	---	6.5	6.0	6.0	5.5	5.0	5.0
14				---	---	---	7.0	6.5	7.0	6.5	5.5	6.0
15				---	---	---	7.0	7.0	7.0	6.5	6.0	6.5
16				---	---	---	7.0	5.5	6.0	6.5	6.0	6.5
17				---	---	---	5.5	5.5	5.5	6.5	6.0	6.5
18				---	---	---	5.5	5.0	5.0	6.5	6.0	6.5
19				---	---	---	5.0	4.0	4.5	7.0	6.5	6.5
20				---	---	---	4.0	3.5	3.5	7.5	7.0	7.0
21				---	---	---	3.5	3.5	3.5	7.5	7.0	7.5
22				---	---	---	4.0	3.5	3.5	7.5	7.0	7.0
23				---	---	---	4.0	3.5	3.5	6.5	6.0	6.5
24				---	---	---	3.5	3.5	3.5	6.0	5.5	6.0
25				---	---	---	3.5	3.5	3.5	6.0	5.5	6.0
26				---	---	---	3.5	3.5	3.5	6.0	5.5	6.0
27				---	---	---	4.0	3.5	3.5	6.0	5.5	5.5
28				---	---	---	4.0	3.5	4.0	6.0	5.5	5.5
29				---	---	---	4.0	4.0	4.0	6.0	5.0	5.5
30				---	---	---	4.0	4.0	4.0	5.0	4.5	5.0
31				---	---	---	4.0	4.0	4.0	4.5	4.0	4.5
MONTH				9.0	6.5	7.5	7.0	3.0	4.5	7.5	3.5	5.5

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	4.0	4.0	7.0	6.0	6.5	11.5	9.5	11.0	13.5	11.5	12.5
2	4.5	4.0	4.0	6.5	5.5	6.0	11.0	10.5	11.0	14.0	13.0	13.5
3	5.5	4.5	5.0	6.0	5.0	6.0	11.0	10.0	10.5	13.5	12.5	13.0
4	6.5	5.5	6.0	7.0	5.5	6.5	11.0	10.0	10.5	13.5	12.5	13.0
5	7.5	6.5	7.0	7.5	6.5	7.0	10.5	10.5	10.5	13.5	11.5	12.5
6	8.0	7.5	8.0	7.5	7.0	7.0	10.5	9.5	10.0	14.0	12.0	13.0
7	8.0	8.0	8.0	7.5	7.5	7.5	10.5	9.0	10.0	14.5	12.5	13.5
8	8.0	7.5	8.0	8.5	7.5	8.0	11.5	9.5	11.0	15.0	13.0	14.0
9	7.5	7.0	7.5	9.5	8.0	9.0	11.5	10.5	11.0	14.5	14.0	14.0
10	7.5	6.5	7.0	9.0	8.0	8.5	12.0	10.5	11.5	14.0	12.5	13.5
11	6.5	6.0	6.5	9.0	8.5	9.0	13.0	11.5	12.5	13.5	12.5	13.0
12	6.0	5.0	5.5	9.0	8.0	8.5	12.5	11.0	12.0	14.0	13.0	13.5
13	5.5	5.0	5.0	8.5	8.0	8.5	12.0	11.0	11.5	13.5	12.5	13.0
14	6.0	5.5	5.5	8.0	7.5	8.0	11.5	10.5	11.0	12.5	12.0	12.5
15	6.5	5.5	6.0	8.0	6.5	7.5	11.5	10.5	11.0	12.5	12.0	12.0
16	6.0	5.0	5.5	---	---	---	11.5	10.5	11.0	12.5	11.5	12.0
17	5.5	5.0	5.5	---	---	---	10.5	10.0	10.5	13.0	12.0	12.5
18	6.5	5.5	6.0	---	---	---	11.5	10.0	10.5	14.0	12.0	13.0
19	7.5	6.5	7.0	---	---	---	11.5	11.0	11.0	15.5	13.5	14.5
20	8.0	7.0	7.5	---	---	---	11.5	11.0	11.0	16.5	14.5	15.5
21	8.5	8.0	8.5	---	---	---	11.5	11.0	11.5	16.0	14.5	15.5
22	9.0	8.5	9.0	11.5	10.0	11.0	11.5	10.5	11.0	15.0	14.0	14.5
23	9.5	9.0	9.0	12.5	11.0	11.5	12.0	10.0	11.0	14.5	13.5	14.0
24	8.5	8.0	8.0	12.5	11.5	12.0	12.0	11.5	12.0	14.5	13.5	14.0
25	8.5	8.0	8.0	11.5	11.0	11.5	13.0	12.0	12.5	14.0	13.5	14.0
26	8.5	7.5	8.0	11.0	11.0	11.0	13.5	12.5	13.0	13.5	13.5	13.5
27	7.5	7.0	7.5	11.0	10.5	10.5	13.0	12.5	13.0	13.5	13.0	13.0
28	7.0	6.5	7.0	10.5	10.0	10.0	12.5	12.0	12.5	13.5	13.0	13.0
29	---	---	---	10.5	10.0	10.0	12.5	11.5	12.0	---	---	---
30	---	---	---	11.5	9.5	10.5	12.5	11.5	12.0	---	---	---
31	---	---	---	11.0	10.5	11.0	---	---	---	---	---	---
MONTH	9.5	4.0	7.0	12.5	5.0	9.0	13.5	9.0	11.5	16.5	11.5	13.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1				---	---	---	10.0	10.0	10.0	---	---	---
2				---	---	---	10.0	10.0	10.0	---	---	---
3				---	---	---	10.5	10.0	10.5	13.0	11.5	12.0
4				---	---	---	10.5	10.5	10.5	12.5	11.5	11.5
5				---	---	---	10.5	10.5	10.5	12.0	12.0	12.0
6				---	---	---	10.5	10.5	10.5	12.5	12.0	12.0
7				---	---	---	11.0	10.5	10.5	12.5	12.0	12.0
8				---	---	---	11.5	11.0	11.0	12.5	12.0	12.5
9				---	---	---	12.0	11.5	12.0	14.0	12.5	13.0
10				---	---	---	12.0	12.0	12.0	14.5	14.0	14.0
11				---	---	---	---	---	---	15.0	14.0	14.5
12				---	---	---	---	---	---	15.0	13.5	14.5
13				---	---	---	---	---	---	14.5	13.5	14.0
14				---	---	---	---	---	---	15.0	13.0	13.5
15				---	---	---	---	---	---	14.5	14.0	14.0
16				---	---	---	---	---	---	14.0	13.0	13.0
17				---	---	---	11.5	11.0	11.5	13.0	12.5	12.5
18				---	---	---	11.5	11.5	11.5	12.5	11.5	11.5
19				---	---	---	11.5	11.5	11.5	12.5	11.5	11.5
20				---	---	---	12.0	11.5	11.5	12.5	12.0	12.0
21				---	---	---	12.5	11.5	11.5	12.5	12.5	12.5
22				10.0	9.5	9.5	12.0	11.5	12.0	13.0	12.0	12.5
23				10.0	9.5	9.5	---	---	---	13.5	13.0	13.0
24				10.0	9.5	10.0	---	---	---	13.5	13.0	13.0
25				10.0	9.5	10.0	---	---	---	14.0	13.0	13.5
26				10.5	9.5	10.0	---	---	---	14.0	13.5	13.5
27				10.5	10.0	10.0	---	---	---	14.0	13.5	13.5
28				10.5	10.0	10.0	---	---	---	13.5	13.0	13.0
29				10.0	10.0	10.0	---	---	---	14.0	13.0	13.5
30				10.0	10.0	10.0	---	---	---	13.5	12.5	13.0
31				10.5	10.0	10.0	---	---	---	---	---	---
MONTH				10.5	9.5	10.0	12.5	10.0	11.0	15.0	11.5	13.0
YEAR	16.5	3.0	9.0									

12197680 BLACK CREEK NEAR MINKLER, WA

LOCATION.--Lat 48°32'34", long 122°06'50", in NW¼NW¼ sec.12, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 0.6 mi (1.0 km) upstream from former station "Black Creek near Lyman 12197690," 2.8 mi (4.5 km) northwest of Lyman, and 1.1 mi (1.8 km) above mouth.

DRAINAGE AREA.--About 0.5 mi² (1.3 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m) from topographic map.

REMARKS.--Water-discharge records fair. No known diversion or regulation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107 ft³/s (3.03 m³/s) Nov. 24, 1975, gage height, 3.05 ft (0.930 m) minimum, 0.07 ft³/s (0.002 m³/s) part or all of each day Aug. 16-21, 1977; minimum gage height, 1.16 ft (0.354 m) Aug. 16, Oct. 2, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, unknown Dec. 2, gage height, unknown; minimum, 0.13 ft³/s (0.004 m³/s) part of each day Aug. 9, 10, gage height, 1.57 ft (0.479 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	3.1	16	1.1	1.9	1.1	2.2	1.7	.76	.30	.21	6.6
2	.40	2.5	36	1.1	3.4	1.0	2.1	1.5	.70	.40	.21	9.2
3	.34	1.8	8.0	1.6	4.3	.95	1.9	1.4	.62	.37	.21	3.6
4	.29	1.3	7.0	2.7	4.5	.95	1.7	1.5	.57	.37	.21	3.6
5	.24	1.2	5.8	3.2	6.2	.95	1.6	1.5	.53	.33	.19	2.7
6	.29	1.5	5.0	2.5	5.9	.95	1.4	1.4	.49	.33	.16	2.3
7	.34	2.1	4.5	2.9	4.3	.95	1.3	1.2	.46	.30	.16	1.8
8	.34	1.5	2.7	8.7	3.4	.95	1.1	1.1	.46	.30	.16	1.8
9	.29	1.7	2.2	6.9	2.7	.95	1.1	1.1	.76	.33	.15	2.7
10	.24	2.7	7.5	5.3	2.1	.88	1.2	1.1	.76	.37	.15	4.1
11	.24	2.5	17	3.8	1.7	1.0	1.4	3.4	1.0	.40	.18	2.7
12	.20	2.4	14	2.9	1.5	.88	1.2	4.3	.82	.36	.96	1.8
13	.71	2.3	17	2.4	1.4	1.1	1.1	2.9	.88	.30	.42	1.4
14	.36	2.5	26	2.5	1.3	1.1	1.1	4.0	.82	.27	.73	1.2
15	.31	2.0	13	2.5	1.4	1.1	1.1	7.2	.76	.27	4.2	1.3
16	.29	1.8	11	2.1	1.2	1.2	1.7	5.9	.70	.27	1.2	1.3
17	.28	1.7	7.5	1.7	1.1	1.5	1.8	3.8	.62	.30	.75	1.7
18	.27	1.5	5.3	1.5	1.3	3.0	3.0	2.7	.53	.30	.60	1.3
19	.29	1.3	3.8	1.4	2.2	2.5	2.9	1.9	.49	.27	.63	1.1
20	.27	1.2	2.9	1.3	2.2	1.8	2.2	1.6	.46	.24	.54	.94
21	.28	1.1	2.5	3.6	2.2	1.5	2.4	1.4	.43	.23	.47	1.9
22	.26	1.1	2.1	3.2	1.8	1.4	2.7	1.4	.43	.24	.43	7.7
23	.90	1.1	1.8	2.2	2.5	1.5	3.2	1.3	.43	.21	.41	4.2
24	1.0	1.3	1.5	1.8	1.8	1.6	3.2	1.1	.40	.21	.40	2.9
25	1.5	4.4	1.3	1.8	1.5	6.2	2.4	1.0	.43	.21	.39	1.8
26	1.0	3.7	1.2	2.4	1.4	5.3	1.9	1.1	.40	.33	.36	1.3
27	.74	4.7	1.1	2.4	1.2	4.3	2.7	1.2	.40	.36	.33	1.1
28	.66	9.0	1.1	2.1	1.2	6.5	3.4	1.5	.37	.27	.30	1.1
29	1.0	5.0	1.5	1.8	---	4.7	2.4	1.2	.37	.24	.30	1.0
30	1.7	4.1	1.4	1.6	---	3.4	1.9	1.0	.33	.21	.27	.94
31	1.3	---	1.1	1.5	---	2.7	---	.88	---	.21	.48	---
TOTAL	16.73	74.1	228.8	82.5	67.6	63.91	59.3	64.28	17.18	9.10	16.16	77.08
MEAN	.54	2.47	7.38	2.66	2.41	2.06	1.98	2.07	.57	.29	.52	2.57
MAX	1.7	9.0	36	8.7	6.2	6.5	3.4	7.2	1.0	.40	4.2	9.2
MIN	.20	1.1	1.1	1.1	1.1	.88	1.1	.88	.33	.21	.15	.94
AC-FT	33	147	454	164	134	127	118	127	34	18	32	153

CAL YR 1977 TOTAL 822.49 MEAN 2.25 MAX 44 MIN .07 AC-FT 1630
WTR YR 1978 TOTAL 776.74 MEAN 2.13 MAX 36 MIN .15 AC-FT 1540

12197680 BLACK CREEK NEAR MINKLER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1975 to current year.

INSTRUMENTATION.--Temperature recorder installed May 16, 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument or station vandalism.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum recorded, 17.5°C Sept. 18, 1976, Aug. 8, 1978; minimum recorded, 0.0°C Feb. 5, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.5°C Aug. 8; minimum recorded, 5.0°C Apr. 13, 16, 17, 23, May 5.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1				---	---	---	---	---	---	9.5	6.5	8.0
2				---	---	---	---	---	---	9.0	7.0	8.0
3				---	---	---	---	---	---	8.5	6.5	7.0
4				---	---	---	---	---	---	7.0	5.5	6.0
5				---	---	---	---	---	---	8.5	5.0	6.5
6				---	---	---	---	---	---	---	6.0	---
7				---	---	---	---	---	---	---	---	---
8				---	---	---	---	---	---	---	---	---
9				---	---	---	---	---	---	---	---	---
10				---	---	---	---	---	---	---	---	---
11				---	---	---	---	---	---	---	---	---
12				---	---	---	6.5	---	---	---	---	---
13				---	---	---	6.5	5.0	6.0	---	---	---
14				---	---	---	7.0	5.5	6.0	---	---	---
15				---	---	---	8.0	6.0	7.0	---	---	---
16				---	---	---	7.0	5.0	5.5	---	---	---
17				---	---	---	7.5	5.0	6.0	---	---	---
18				---	---	---	8.5	6.0	7.0	11.0	---	---
19				---	---	---	8.0	6.5	7.0	13.0	9.5	11.0
20				---	---	---	7.5	6.0	6.5	13.5	10.5	11.5
21				---	---	---	6.5	5.5	6.0	11.0	8.0	9.0
22				---	---	---	5.5	5.5	5.5	9.0	7.0	7.5
23				---	---	---	8.5	5.0	6.5	9.0	7.0	7.5
24				7.5	7.0	7.0	8.5	6.5	7.5	8.5	6.5	7.5
25				7.0	6.0	6.5	9.0	8.0	8.5	9.0	7.5	8.0
26				7.0	6.0	6.5	9.0	8.5	8.5	9.0	8.0	8.5
27				7.5	7.0	7.0	8.0	7.5	8.0	9.0	8.5	8.5
28				---	6.5	---	7.5	6.5	7.0	9.0	8.0	8.5
29				---	---	---	8.5	5.5	7.0	8.5	7.5	8.0
30				---	---	---	8.5	6.5	7.5	10.0	7.0	8.5
31				---	---	---	---	---	---	12.0	9.0	10.0
MONTH				7.5	6.0	7.0	9.0	5.0	7.0	13.5	5.0	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	10.5	11.5	15.0	13.5	14.0	15.0	13.0	14.0	13.0	12.0	12.5
2	14.0	11.5	12.5	14.0	13.0	13.5	15.5	13.5	14.5	13.0	12.5	12.5
3	15.0	12.5	13.5	13.5	12.5	13.0	15.5	14.0	14.5	12.5	11.5	12.0
4	15.5	13.0	14.0	12.5	12.0	12.0	15.5	14.0	14.5	11.5	11.0	11.5
5	16.0	13.5	14.5	13.0	11.5	12.5	15.0	13.0	14.0	11.5	11.0	11.0
6	15.0	13.5	14.0	14.0	12.0	13.0	15.5	13.5	14.5	11.5	11.0	11.0
7	14.0	13.0	13.5	14.5	12.5	13.0	16.0	14.5	15.0	11.5	10.5	11.0
8	13.5	12.0	13.0	13.5	13.0	13.0	17.5	15.5	16.5	11.0	10.5	11.0
9	12.5	10.5	11.5	13.0	11.5	12.5	17.0	15.5	16.0	12.0	11.0	11.5
10	11.0	10.0	10.5	11.5	11.0	11.5	15.5	15.0	15.5	11.5	10.5	11.0
11	12.0	10.5	11.0	12.0	11.0	11.5	15.0	14.0	14.5	11.5	10.5	11.0
12	11.5	11.0	11.5	13.5	11.0	12.0	14.0	13.0	13.5	11.5	10.0	11.0
13	11.0	10.5	11.0	14.5	12.5	13.5	14.0	12.5	13.0	12.0	10.5	11.0
14	11.5	10.0	10.5	15.0	13.0	14.0	13.0	12.5	13.0	12.0	11.0	11.5
15	10.5	10.0	10.0	14.5	13.5	14.0	12.5	11.5	12.5	11.5	10.5	11.0
16	10.5	10.5	10.5	14.0	12.5	13.0	12.0	11.5	11.5	10.5	9.0	10.0
17	12.5	10.0	11.0	13.0	12.0	12.5	13.0	12.0	12.5	9.5	8.5	9.0
18	13.0	11.0	11.5	14.0	12.0	13.0	12.5	12.5	12.5	9.5	8.5	9.0
19	13.0	11.0	12.0	14.5	12.5	13.5	12.5	12.0	12.5	10.5	8.5	9.5
20	13.5	11.5	12.5	15.5	13.5	14.5	13.0	11.5	12.0	10.5	10.0	10.0
21	13.5	12.0	12.5	16.5	14.5	15.0	14.0	12.5	13.0	10.0	9.5	10.0
22	12.5	11.5	12.0	17.0	15.0	16.0	13.0	12.0	12.0	10.0	9.5	9.5
23	12.5	11.5	12.0	17.0	15.5	16.0	12.5	12.0	12.5	10.5	9.5	10.0
24	12.0	11.5	11.5	15.5	14.0	15.0	13.0	12.5	12.5	12.0	10.5	11.5
25	11.5	11.0	11.5	16.5	14.5	15.5	13.0	12.5	12.5	12.5	11.5	12.0
26	13.5	11.5	12.0	16.0	15.5	15.5	13.5	12.5	13.0	13.5	12.5	13.0
27	14.5	12.0	13.0	15.5	14.5	15.0	14.0	12.5	13.0	13.0	12.0	12.5
28	15.5	13.5	14.0	15.5	14.0	14.5	14.0	13.5	13.5	12.0	11.5	12.0
29	14.5	14.0	14.0	15.5	13.5	14.5	15.0	13.5	14.5	13.0	11.5	12.0
30	15.0	13.5	14.0	15.5	14.0	14.5	15.5	14.0	15.0	12.5	11.5	12.5
31	---	---	---	15.0	13.0	14.0	15.0	13.0	14.5	---	---	---
MONTH	16.0	10.0	12.0	17.0	11.0	13.5	17.5	11.5	13.5	13.5	8.5	11.0
YEAR	17.5	5.0	11.5									

12197700 WISEMAN CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'49", long 122°08'08", in SW¼SW¼ sec.11, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 200 ft (61 m) upstream from State Highway 20 crossing, and 3.4 mi (5.5 km) west of Lyman.

DRAINAGE AREA.--About 3 mi^2 (7.8 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

REVISED RECORDS.--WDR WA-76-1: 1974 (M), 1975.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m) from topographic map.

REMARKS.--Water discharge records good except those above 25 ft^3/s (0.85 m^3/s) which are poor. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 525 ft^3/s (14.9 m^3/s) Dec. 1, 1977, gage height, 3.69 ft (1.125 m) from rating extended above 184 ft^3/s (5.21 m^3/s); maximum gage height, 4.23 ft (1.289 m) Dec. 2, 1975; minimum, 0.65 ft^3/s (0.018 m^3/s) Sept. 25, 1974, Aug. 17, 18, 1977; minimum gage height, 1.24 ft (0.378 m) Aug. 9, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 525 ft^3/s (14.9 m^3/s) Dec. 1, gage height, 3.69 ft (1.125 m) from ratin extended above 184 ft^3/s (5.21 m^3/s); minimum, 0.84 ft^3/s (0.024 m^3/s) Aug. 9, gage height, 1.24 ft (0.378 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	25	174	9.5	14	8.1	13	10	5.7	2.2	1.3	28
2	2.0	23	232	8.8	25	7.4	13	9.5	5.2	2.8	1.2	40
3	1.9	13	50	13	25	7.1	13	8.8	5.0	2.7	1.1	17
4	1.7	9.4	37	19	24	6.8	11	10	4.5	2.5	1.1	17
5	1.4	9.2	26	20	28	7.1	11	9.8	4.3	2.4	1.0	13
6	1.5	12	26	16	28	6.8	9.8	8.4	3.9	2.2	1.0	11
7	2.3	17	26	19	23	6.8	9.1	7.4	3.9	2.1	1.0	8.8
8	2.4	11	23	42	18	6.5	8.4	6.8	3.9	2.1	1.0	9.5
9	2.6	14	21	35	15	6.5	8.1	6.8	6.8	2.2	.92	13
10	2.0	23	39	28	13	6.0	8.8	7.1	6.0	2.7	1.0	23
11	1.7	20	76	23	12	6.8	10	17	6.5	2.8	1.2	14
12	2.9	20	56	17	11	6.2	8.4	23	5.7	2.2	4.7	9.5
13	6.0	18	71	15	9.8	7.1	8.1	15	7.1	2.0	2.4	7.7
14	2.8	20	106	15	9.5	8.1	8.1	23	5.5	1.8	3.3	6.8
15	2.0	16	71	15	10	7.4	8.1	34	4.7	1.7	26	7.4
16	1.9	16	59	13	9.1	8.4	12	32	4.5	1.8	6.8	7.4
17	1.8	15	41	11	8.4	11	12	21	4.1	2.0	3.7	9.5
18	1.7	12	33	11	9.8	18	15	15	3.7	1.8	3.0	8.1
19	1.9	11	27	9.8	13	14	14	12	3.5	1.7	3.5	6.8
20	1.7	9.2	21	9.5	13	11	12	11	3.3	1.6	3.0	6.5
21	1.9	8.1	18	20	12	9.1	12	9.8	3.1	1.5	2.6	12
22	1.8	7.8	17	18	11	8.4	16	10	3.1	1.4	2.4	51
23	6.7	7.8	15	14	13	8.8	17	9.5	3.1	1.3	2.4	24
24	7.1	8.2	13	12	11	8.4	16	8.4	2.8	1.3	2.4	15
25	11	29	13	12	10	25	13	7.4	3.1	1.3	2.5	11
26	8.8	27	12	15	9.5	24	11	8.1	3.0	2.0	2.1	8.1
27	5.9	27	11	14	8.8	21	15	9.1	2.7	2.4	2.0	9.5
28	4.5	115	11	13	8.4	31	18	10	2.5	1.6	2.0	9.1
29	8.5	96	15	12	---	25	13	8.4	2.4	1.5	1.8	8.4
30	14	63	12	11	---	18	11	7.1	2.4	1.4	1.8	8.1
31	9.7	---	10	11	---	15	---	6.5	---	1.3	2.6	---
TOTAL	124.2	702.7	1362	501.6	402.3	360.8	354.9	381.9	126.0	60.3	92.82	420.2
MEAN	4.01	23.4	43.9	16.2	14.4	11.6	11.8	12.3	4.20	1.95	2.99	14.0
MAX	14	115	232	42	28	31	18	34	7.1	2.8	26	51
MIN	1.4	7.8	10	8.8	8.4	6.0	8.1	6.5	2.4	1.3	.92	6.5
AC-FT	246	1390	2700	995	798	716	704	757	250	120	184	833

CAL YR 1977 TOTAL 4681.65 MEAN 12.8 MAX 232 MIN .70 AC-FT 9290
WTR YR 1978 TOTAL 4889.72 MEAN 13.4 MAX 232 MIN .92 AC-FT 9700

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES; April 1974 to current year.

INSTRUMENTATION.--Temperature recorder installed April 24, 1974.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 16.5°C Aug. 12, 13, 17, 1977, July 22, 23, 1978, Aug. 8, 9, 1978; minimum, 1.0°C Jan. 11, 1975, Mar. 3, 4, 1976, Nov. 20, 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 16.5°C July 22, 23, Aug. 8, 9; minimum, 1.0°C Nov. 20, 21, 22.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	9.5	10.0	9.0	6.5	7.5	6.0	5.0	5.5	3.0	2.5	3.0
2	9.5	8.0	9.0	7.0	5.5	6.5	7.0	6.0	6.5	2.5	2.5	2.5
3	9.0	7.5	8.5	6.0	5.0	5.5	6.5	5.5	6.5	3.0	2.5	3.0
4	9.0	7.5	8.0	6.5	5.5	6.0	5.5	5.0	5.0	4.5	3.0	3.5
5	9.5	8.0	8.5	7.0	6.0	6.5	4.5	4.0	4.0	5.0	4.5	4.5
6	9.0	8.5	8.5	7.0	6.5	6.5	5.0	4.0	4.5	4.5	4.0	4.0
7	10.0	9.0	9.5	6.0	5.0	5.5	5.0	4.0	4.5	4.5	4.0	4.0
8	10.0	9.5	9.5	5.0	4.0	4.5	4.0	3.5	3.5	6.0	4.5	5.5
9	9.5	8.5	9.0	6.5	4.5	5.0	3.5	3.0	3.5	6.0	5.5	6.0
10	9.0	7.5	8.0	8.0	6.5	7.5	5.0	3.5	4.0	6.0	6.0	6.0
11	9.0	7.5	8.0	8.5	7.5	8.0	5.5	5.0	5.5	6.0	5.5	6.0
12	10.0	8.5	9.0	7.5	7.0	7.0	5.5	5.5	5.5	6.0	5.5	5.5
13	10.0	8.5	9.0	7.0	7.0	7.0	6.5	5.5	6.0	6.0	5.5	6.0
14	9.0	7.5	8.0	7.0	6.0	6.5	7.0	6.0	6.5	7.0	6.0	6.5
15	10.0	8.5	9.5	6.5	5.5	6.0	7.0	6.0	6.5	7.0	6.5	7.0
16	10.0	9.0	9.5	6.0	5.5	5.5	6.0	5.5	5.5	7.0	6.5	6.5
17	9.0	8.0	8.5	5.0	3.5	4.5	5.5	5.0	5.0	7.0	6.5	6.5
18	9.0	7.5	8.5	3.5	2.0	2.5	5.0	4.5	5.0	7.0	6.5	6.5
19	9.5	8.0	9.0	2.5	2.0	2.0	5.0	4.5	4.5	7.0	7.0	7.0
20	8.5	7.0	8.0	2.0	1.0	1.5	4.5	4.5	4.5	7.0	7.0	7.0
21	9.5	8.0	9.0	1.0	1.0	1.0	5.0	5.0	5.0	7.0	6.0	6.5
22	10.5	9.5	10.0	1.5	1.0	1.0	5.0	5.0	5.0	6.0	5.5	5.5
23	11.0	9.5	10.0	2.5	1.5	2.0	5.0	4.5	5.0	5.5	5.0	5.0
24	10.5	9.0	9.5	4.0	2.5	3.5	4.5	4.5	4.5	5.0	5.0	5.0
25	9.5	8.0	9.0	5.5	4.0	5.0	4.5	4.5	4.5	5.5	5.0	5.0
26	9.0	8.0	8.5	5.5	5.0	5.0	4.5	4.0	4.0	5.5	5.0	5.5
27	9.0	8.0	8.5	5.5	5.0	5.5	4.0	3.5	4.0	5.5	5.0	5.0
28	9.0	8.5	9.0	6.0	5.0	5.5	4.0	3.5	3.5	5.5	5.5	5.5
29	9.0	8.5	9.0	6.0	5.5	6.0	4.5	4.0	4.5	5.5	5.0	5.5
30	8.5	7.5	8.0	5.5	5.5	5.5	4.5	4.5	4.5	5.0	4.5	5.0
31	7.5	7.0	7.0	---	---	---	4.5	3.0	3.5	5.0	4.5	4.5
MONTH	11.0	7.0	9.0	9.0	1.0	5.0	7.0	3.0	5.0	7.0	2.5	5.5

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.5	4.5	4.5	5.5	4.5	5.0	7.0	7.0	7.0	9.0	7.0	8.0
2	5.5	4.5	5.0	5.0	4.5	5.0	7.0	6.5	7.0	8.5	8.5	8.5
3	6.5	5.5	6.0	5.0	4.5	4.5	7.5	6.5	7.0	8.0	7.5	8.0
4	7.0	6.0	6.5	5.5	5.0	5.0	7.5	7.0	7.5	7.5	7.0	7.5
5	7.5	7.0	7.0	6.0	5.5	5.5	7.0	6.5	7.0	8.0	6.0	7.0
6	7.0	7.0	7.0	7.0	6.5	6.5	7.0	5.5	6.0	9.5	6.5	7.5
7	7.0	7.0	7.0	7.5	7.0	7.5	7.0	5.5	6.5	9.5	7.5	8.5
8	7.0	6.5	6.5	8.0	7.5	7.5	7.5	6.5	7.0	9.5	8.0	9.0
9	6.5	6.0	6.5	8.0	8.0	8.0	8.0	6.5	7.0	9.5	9.0	9.5
10	6.0	5.0	5.5	8.0	7.0	7.5	8.5	7.5	8.0	9.0	8.5	8.5
11	5.0	4.5	5.0	7.5	7.0	7.5	8.0	7.5	7.5	8.0	7.5	8.0
12	4.5	4.5	4.5	7.0	6.5	7.0	7.0	6.0	6.5	8.5	7.0	7.5
13	5.0	4.5	4.5	7.0	6.5	7.0	7.0	6.0	6.5	8.5	8.0	8.0
14	6.0	5.0	5.5	7.0	6.0	6.5	7.0	6.0	6.5	8.5	8.0	8.0
15	5.5	5.5	5.5	7.0	5.5	6.0	7.5	6.5	7.0	8.0	7.5	7.5
16	5.5	5.0	5.0	8.0	7.0	7.5	7.5	6.5	7.0	8.5	7.5	8.0
17	5.5	5.0	5.0	7.0	6.5	6.5	7.0	6.0	6.5	9.0	8.0	8.0
18	6.0	5.5	6.0	8.0	6.0	7.0	8.0	6.5	7.0	10.5	8.0	9.0
19	7.0	6.0	6.5	7.5	6.5	7.0	8.0	7.5	7.5	12.0	9.0	10.5
20	7.0	6.0	6.5	7.5	6.0	7.0	8.0	7.0	7.5	12.5	10.5	11.5
21	7.5	7.0	7.0	8.0	6.5	7.5	7.5	6.5	7.0	11.0	8.5	9.5
22	8.0	7.5	7.5	8.5	7.0	8.0	6.5	6.0	6.5	9.0	7.5	8.5
23	8.0	7.5	7.5	8.5	8.0	8.5	8.0	6.0	7.0	9.0	7.5	8.0
24	7.5	6.5	7.0	8.5	8.0	8.0	8.5	7.0	7.5	9.0	7.0	8.0
25	7.0	6.5	6.5	8.0	7.0	7.5	9.0	8.0	8.5	9.0	8.0	8.5
26	7.0	6.5	6.5	7.5	6.5	7.0	9.0	8.5	9.0	9.0	8.5	9.0
27	6.5	5.5	6.0	8.0	7.5	7.5	9.0	8.0	8.5	9.0	9.0	9.0
28	6.0	5.0	5.5	7.5	7.0	7.5	8.0	7.5	8.0	9.0	8.5	9.0
29	---	---	---	8.0	7.0	7.5	8.0	7.0	7.5	9.0	8.0	8.5
30	---	---	---	8.0	7.0	7.5	8.0	7.0	7.5	10.0	7.5	8.5
31	---	---	---	7.5	5.5	6.5	---	---	---	11.0	8.5	10.0
MONTH	8.0	4.5	6.0	8.5	4.5	7.0	9.0	5.5	7.0	12.5	6.0	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	10.0	11.0	14.5	12.5	13.5	15.0	13.0	14.0	14.0	13.0	13.5
2	13.0	10.5	11.5	13.5	12.5	13.0	15.0	13.0	14.0	13.5	13.0	13.5
3	13.5	11.5	12.5	13.0	12.5	12.5	15.5	13.5	14.5	13.0	12.5	13.0
4	13.5	12.0	12.5	12.0	11.5	12.0	15.5	13.5	14.5	12.5	12.0	12.5
5	14.0	12.0	13.0	13.0	11.5	12.5	15.0	12.5	13.5	12.0	11.5	12.0
6	13.5	12.0	13.0	13.5	12.0	12.5	15.5	13.0	14.0	12.0	11.5	12.0
7	12.5	12.0	12.5	14.0	12.0	13.0	16.0	13.0	14.5	12.0	11.5	11.5
8	12.5	11.5	12.0	13.0	12.5	12.5	16.5	14.5	15.5	12.0	11.5	11.5
9	12.0	10.5	11.5	12.5	11.5	12.5	16.5	14.5	15.5	12.5	12.0	12.0
10	11.0	10.0	10.5	12.0	11.5	11.5	15.5	14.0	14.5	12.5	12.0	12.0
11	11.5	10.5	11.0	12.0	11.5	12.0	14.5	14.0	14.0	12.0	11.5	11.5
12	11.5	11.0	11.0	13.5	11.0	12.5	14.0	13.5	13.5	12.0	11.0	11.5
13	11.0	10.5	11.0	14.5	12.0	13.0	14.0	12.5	13.5	12.0	11.0	11.5
14	11.5	10.0	10.5	14.5	12.5	13.5	13.0	13.0	13.0	12.5	11.5	12.0
15	11.0	10.0	10.5	14.5	13.0	13.5	13.0	12.5	13.0	12.0	11.5	12.0
16	11.0	10.5	10.5	13.5	12.5	13.0	12.5	12.5	12.5	11.5	10.5	11.0
17	12.0	10.0	11.0	13.0	12.0	12.5	13.5	12.5	13.0	10.5	9.5	10.0
18	12.0	10.5	11.5	14.0	12.0	13.0	13.0	13.0	13.0	10.0	9.0	9.5
19	12.5	10.5	11.5	14.5	12.5	13.5	13.0	13.0	13.0	10.5	9.0	9.5
20	12.5	11.0	12.0	15.0	13.0	14.0	13.5	12.0	13.0	11.0	10.5	10.5
21	13.0	11.5	12.0	16.0	13.0	14.5	14.0	13.0	13.5	10.5	10.5	10.5
22	12.5	11.5	12.0	16.5	14.0	15.0	13.5	12.5	13.0	10.5	10.0	10.0
23	12.5	11.0	12.0	16.5	14.0	15.0	13.0	12.5	12.5	11.0	10.0	10.5
24	12.0	11.0	11.5	15.5	13.5	14.5	13.5	13.0	13.0	12.0	11.0	11.5
25	11.5	11.0	11.5	16.0	13.5	14.5	13.5	13.0	13.0	12.5	11.5	12.0
26	13.0	11.0	12.0	15.0	14.5	14.5	14.0	13.0	13.5	13.0	12.0	12.5
27	14.0	11.5	12.5	15.5	14.0	14.5	14.0	12.5	13.5	13.0	12.5	13.0
28	14.5	12.0	13.5	15.5	13.0	14.0	14.5	13.5	14.0	12.0	12.0	12.0
29	13.5	13.0	13.0	15.5	13.0	14.0	14.5	13.5	14.0	13.0	12.0	12.0
30	14.0	13.0	13.5	15.5	13.0	14.0	15.0	14.0	14.5	12.5	12.0	12.5
31	---	---	---	15.0	12.5	14.0	14.5	14.0	14.5	---	---	---
MONTH	14.5	10.0	12.0	16.5	11.0	13.5	16.5	12.0	13.5	14.0	9.0	11.5
YEAR	16.5	1.0	8.5									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA

LOCATION.--Lat 48°29'03", long 122°14'31", in NW¼NW¼ sec.36, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110007, in left bank pier of bridge on State Highway No. 9, 1.0 mi (1.6 km) south of Sedro Woolley, and at mile 22.3 (35.9 km).

DRAINAGE AREA.--3,015 mi^2 (7,809 km^2), of which 400 mi^2 (1,036 km^2) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1908-1924, February 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 15.46 ft (4.712 m) National Geodetic Vertical Datum of 1929. May 1, 1908 to Dec. 31, 1923 nonrecording gage at site 200 ft (61 m) upstream at datum 24.4 ft (7.44 m) lower.

REMARKS.--Water-discharge records good except those for periods of no gage-height record, Nov. 1 to Feb. 2, which are fair. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs (see sta 12176500 and 12177700), Baker Lake (12191600) and Lake Shannon (12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--19 years (water years 1909-24, 1976-78) 16,230 ft^3/s (460 m^3/s); 11,760,000 acre-ft/yr (14,500 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge observed, 220,000 ft^3/s (6,230 m^3/s) Nov. 30, 1909, gage height, 56.5 ft (17.22 m) datum then in use, from rating curve extended above 62,000 ft^3/s (1,760 m^3/s); minimum observed, 2,830 ft^3/s (80.1 m^3/s) Sept 29-30, Oct. 10-11, 1915.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 39.1 ft (11.92 m), present datum, discharge about 400,000 ft^3/s (11,300 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft^3/s (1,420 m^3/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft^3/s)	(m^3/s)	(ft)	(m)			(ft^3/s)	(m^3/s)	(ft)	(m)
Nov. 2	unknown	50,000	1,420	----	----	Dec. 3	unknown	*69,000	1,950	----	----
Nov. 26	unknown	58,000	1,640	----	----	Dec. 14	unknown	61,000	1,730	----	----

Minimum daily discharge, 4,200 ft^3/s (119 m^3/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5400	12000	25000	15600	12600	12900	16800	11000	15200	24500	13700	13000
2	4700	35000	49000	15000	14200	11200	16100	9570	18600	25000	15100	25400
3	5100	21600	57000	15200	16300	11000	15300	9760	22200	25700	15500	20200
4	4200	16000	39000	18200	15300	10500	14200	9540	24900	23500	15200	15400
5	4400	13800	27000	20200	13800	8250	14000	9630	27900	23100	14300	14400
6	4800	12800	24000	20400	15100	9320	14800	8080	27600	20000	12600	16000
7	5300	13600	25000	18200	16500	12400	13200	7820	25200	19700	11500	15600
8	4700	12800	22000	21000	17100	15300	11600	9290	23800	18600	11700	14400
9	5400	12000	21600	22600	15900	12700	10100	10900	23300	18000	12200	14000
10	5000	16000	22600	21000	15900	12100	11600	13400	22900	18000	11600	15000
11	4800	17800	41000	19000	15100	12400	12200	11900	17100	17000	13100	17000
12	4700	17000	44000	18000	14300	12100	12100	12100	17000	13800	11300	16600
13	5400	17000	42000	17000	14200	10800	11300	12100	18900	13600	9050	13600
14	6800	19000	52000	16000	11900	12800	10700	16500	16700	15600	8140	12900
15	5900	19000	48000	15600	12800	11400	9320	16900	17500	16600	13200	12000
16	7050	16000	38000	15000	11400	9880	9020	16500	15400	17900	14800	12100
17	7000	15000	29000	15800	12000	10100	10300	14600	13300	20400	13300	12400
18	5600	13600	26000	15400	9820	9980	9760	13000	13400	18700	12200	13100
19	5400	12600	24400	14400	7820	9480	8660	13000	14800	17700	11200	11000
20	6790	11600	21000	13000	9110	9940	9630	14700	17600	16500	11800	9970
21	6720	11800	19000	12800	10700	10000	11100	17300	18900	14900	11200	9950
22	6670	11400	17800	14000	10700	11100	11000	17500	19400	15800	10200	14500
23	6880	10600	16800	13000	12200	11900	10000	15600	17400	18200	9800	23900
24	7900	11000	16800	14200	13700	16500	9260	12900	13900	17400	9800	20400
25	11400	11800	15600	13600	14000	19100	8340	10800	12900	17700	10400	17300
26	11900	42000	14600	14000	13900	23300	8720	11500	11800	16200	11200	14900
27	10100	32000	15200	15000	13700	21400	12200	11800	14800	17700	10000	14100
28	8670	27000	15800	13000	12700	22800	14200	12600	19300	16400	8200	13600
29	9140	31000	16600	12000	---	20900	13400	12100	26000	14100	6800	15100
30	11700	28000	17000	11800	---	18800	11600	11900	26700	10700	8000	12400
31	11800	---	16000	12200	---	19800	---	14500	---	10000	10000	---
TOTAL	211320	540800	858800	492200	372750	420150	350510	388790	574400	553000	357090	450220
MEAN	6817	18030	27700	15880	13310	13550	11680	12540	19150	17840	11520	15010
MAX	11900	42000	57000	22600	17100	23300	16800	17500	27900	25700	15500	25400
MIN	4200	10600	14600	11800	7820	8250	8340	7820	11800	10000	6800	9950
AC-FT	419200	1073000	1703000	976300	739300	833400	695200	771200	1139000	1097000	708300	893000

CAL YR 1977 TOTAL 4873030 MEAN 13350 MAX 57000 MIN 4200 AC-FT 9666000
WTR YR 1978 TOTAL 5570030 MEAN 15260 MAX 57000 MIN 4200 AC-FT 11050000

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974, October 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
pH: June 1977 to September 1977.
WATER TEMPERATURE: October 1975 to current year.
DISSOLVED OXYGEN: October 1975 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. In addition to water-quality monitor record, field checks were taken approximately twice weekly by the observor.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 67 micromhos Mar. 22, 1977; minimum recorded, 20 micromhos Feb. 6, 7, 8, 1978.
WATER TEMPERATURES: Maximum recorded, 15.5°C July 8, 15, Sept. 12, 13, 1977; minimum recorded, 2.5°C Nov. 21, 1977, Jan. 1, 2, 1978.

DISSOLVED OXYGEN: Maximum recorded, 13.3 mg/L Dec. 5, 8. 1975, Mar. 21, 1977; minimum observed, 9.5 mg/l Jan. 12, Sept. 27, 1978.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A specific conductance of 77 micromhos was observed Feb. 11, 1974. A pH of 8.6 units was observed Mar. 24, 1976. A temperature of 14.9°C was observed on Aug. 26, 1974.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 66 micromhos Apr. 19, 24, 25; minimum recorded, 24 micromhos Sept. 23.
pH: Maximum recorded, 7.7 units Oct. 13, 19, 20; minimum recorded, 7.0 units Nov. 27, 28, Mar. 27, 28, June 3, 28, 29, Sept. 23, 24.
WATER TEMPERATURES: Maximum recorded, 14.5°C July 13, 14, 20; minimum recorded, 2.5°C Nov. 21, Jan. 1, 2.
DISSOLVED OXYGEN: Maximum recorded, 12.8 mg/L Dec. 31, Jan. 1, 2; minimum observed, 9.5 mg/L Jan. 12, Sept. 27.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	48	44	47	---	---	---	---	---	---	50	46	47
2	50	46	48	---	---	---	---	---	---	48	45	46
3	51	47	48	---	---	---	---	---	---	49	46	47
4	53	46	49	---	---	---	---	---	---	47	44	45
5	52	48	50	---	---	---	---	---	---	45	42	43
6	56	50	52	---	---	---	---	---	---	45	43	44
7	57	49	53	---	---	---	---	---	---	47	44	46
8	56	52	54	46	42	44	---	---	---	47	40	45
9	55	51	53	47	42	44	---	---	---	43	40	42
10	54	50	52	46	41	43	---	---	---	46	43	45
11	60	50	55	45	40	42	---	---	---	48	39	44
12	62	54	56	48	40	42	---	---	---	49	45	47
13	60	53	57	49	42	44	---	---	---	50	47	48
14	58	49	53	50	40	43	---	---	---	52	48	50
15	60	52	55	52	43	46	---	---	---	54	51	52
16	60	54	57	54	47	51	---	---	---	58	53	55
17	61	54	57	51	46	49	---	---	---	59	54	56
18	60	56	58	48	40	45	---	---	---	58	53	56
19	62	49	57	47	43	44	---	---	---	58	54	56
20	54	41	49	45	41	44	---	---	---	59	54	57
21	55	48	51	---	---	---	---	---	---	60	55	58
22	55	48	52	---	---	---	---	---	---	---	---	---
23	56	50	53	---	---	---	---	---	---	---	---	---
24	54	50	52	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	51	49	50	---	---	---
31	---	---	---	---	---	---	51	47	48	---	---	---
MONTH	62	41	53	54	40	45	51	47	49	60	39	49

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---				---	---	---	---	---	---
2	---	---	---				---	---	---	---	---	---
3	---	---	---				---	---	---	---	---	---
4	---	---	---				---	---	---	---	---	---
5	---	---	---				---	---	---	---	---	---
6	54	46	50				---	---	---	---	---	---
7	51	46	49				---	---	---	---	---	---
8	53	46	48				---	---	---	---	---	---
9	---	---	---				---	---	---	---	---	---
10	---	---	---				---	---	---	---	---	---
11	---	---	---				---	---	---	56	55	56
12	---	---	---				---	---	---	56	53	55
13	---	---	---				---	---	---	56	54	56
14	---	---	---				---	---	---	54	50	51
15	---	---	---				---	---	---	53	50	51
16	---	---	---				---	---	---	57	53	55
17	---	---	---				---	---	---	59	55	57
18	---	---	---				---	---	---	62	57	59
19	---	---	---				66	61	63	63	60	61
20	---	---	---				62	59	61	59	54	58
21	---	---	---				62	58	59	---	---	---
22	---	---	---				60	57	59	---	---	---
23	---	---	---				65	56	61	---	---	---
24	---	---	---				66	62	64	---	---	---
25	---	---	---				66	61	63	---	---	---
26	---	---	---				---	---	---	---	---	---
27	---	---	---				---	---	---	---	---	---
28	---	---	---				---	---	---	---	---	---
29	---	---	---				---	---	---	---	---	---
30	---	---	---				---	---	---	---	---	---
31	---	---	---				---	---	---	57	54	56
MONTH	54	46	49				66	56	61	63	50	56

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	56	52	54	42	38	40				---	---	---
2	52	48	51	40	39	40				---	---	---
3	---	---	---	39	38	39				---	---	---
4	---	---	---	41	39	39				---	---	---
5	---	---	---	43	40	41				---	---	---
6	---	---	---	42	40	41				---	---	---
7	---	---	---	41	38	40				---	---	---
8	---	---	---	40	35	37				---	---	---
9	---	---	---	37	35	35				---	---	---
10	---	---	---	39	35	37				---	---	---
11	---	---	---	40	37	39				---	---	---
12	47	45	46	46	38	41				---	---	---
13	47	45	46	46	41	44				---	---	---
14	46	41	44	43	40	42				---	---	---
15	49	44	47	40	38	40				---	---	---
16	49	44	46	38	37	38				---	---	---
17	53	45	49	39	34	36				---	---	---
18	49	43	46	42	37	40				47	42	45
19	45	39	42	43	40	41				55	44	49
20	42	38	41	44	41	42				55	48	51
21	41	39	40	---	---	---				53	48	50
22	40	39	40	---	---	---				51	34	43
23	43	38	40	---	---	---				33	24	28
24	42	38	41	---	---	---				34	26	31
25	43	38	41	---	---	---				39	33	36
26	45	40	42	---	---	---				46	37	42
27	46	42	45	---	---	---				49	43	46
28	43	40	41	---	---	---				44	41	43
29	40	36	38	---	---	---				50	40	45
30	40	37	38	---	---	---				52	47	50
31	---	---	---	---	---	---				---	---	---
MONTH	56	36	44	46	34	40				55	24	43
YEAR	66	24	48									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

PH (UNITS), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.5	7.2	7.3	---	---	---	---	---	---	7.2	7.2	7.2
2	7.4	7.3	7.4	---	---	---	---	---	---	7.2	7.2	7.2
3	7.5	7.3	7.4	---	---	---	---	---	---	7.2	7.2	7.2
4	7.4	7.3	7.3	---	---	---	---	---	---	7.2	7.1	7.2
5	7.5	7.3	7.4	---	---	---	---	---	---	7.1	7.1	7.1
6	7.5	7.3	7.4	---	---	---	---	---	---	7.2	7.1	7.1
7	7.6	7.2	7.3	---	---	---	---	---	---	7.2	7.1	7.2
8	7.5	7.2	7.4	7.3	7.2	7.2	---	---	---	7.2	7.1	7.1
9	7.5	7.2	7.4	7.2	7.2	7.2	---	---	---	7.1	7.1	7.1
10	7.6	7.4	7.5	7.2	7.2	7.2	---	---	---	7.1	7.1	7.1
11	7.5	7.2	7.4	7.2	7.2	7.2	---	---	---	7.2	7.1	7.1
12	7.5	7.3	7.4	7.2	7.2	7.2	---	---	---	7.2	7.2	7.2
13	7.7	7.2	7.4	7.2	7.2	7.2	---	---	---	7.2	7.2	7.2
14	7.5	7.2	7.4	7.3	7.2	7.2	---	---	---	7.2	7.2	7.2
15	7.6	7.2	7.4	7.3	7.2	7.3	---	---	---	7.2	7.2	7.2
16	7.6	7.3	7.4	7.2	7.2	7.2	---	---	---	7.3	7.2	7.2
17	7.6	7.3	7.4	7.2	7.2	7.2	---	---	---	7.3	7.2	7.2
18	7.6	7.3	7.4	7.3	7.2	7.2	---	---	---	7.2	7.2	7.2
19	7.7	7.2	7.4	7.3	7.2	7.3	---	---	---	7.2	7.2	7.2
20	7.7	7.3	7.5	7.3	7.3	7.3	---	---	---	7.2	7.2	7.2
21	7.6	7.3	7.4	---	---	---	---	---	---	7.3	7.2	7.3
22	7.5	7.3	7.4	---	---	---	---	---	---	7.3	7.3	7.3
23	7.6	7.3	7.4	---	---	---	---	---	---	7.3	7.2	7.3
24	7.4	7.3	7.4	---	---	---	---	---	---	7.3	7.2	7.3
25	7.3	7.2	7.3	---	---	---	---	---	---	7.3	7.2	7.2
26	---	---	---	---	---	---	---	---	---	7.3	7.2	7.2
27	---	---	---	7.1	7.0	7.0	---	---	---	7.3	7.2	7.3
28	---	---	---	7.1	7.0	7.0	---	---	---	7.3	7.2	7.2
29	---	---	---	---	---	---	---	---	---	7.3	7.2	7.2
30	---	---	---	---	---	---	7.3	7.2	7.2	7.3	7.2	7.3
31	---	---	---	---	---	---	7.2	7.2	7.2	7.3	7.2	7.3
MONTH	7.7	7.2	7.4	7.3	7.0	7.2	7.3	7.2	7.2	7.3	7.1	7.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.3	7.2	7.2	7.5	7.4	7.4	7.3	7.2	7.2	---	---	---
2	7.3	7.2	7.2	7.5	7.4	7.5	7.3	7.2	7.2	---	---	---
3	7.2	7.2	7.2	7.5	7.4	7.5	7.3	7.2	7.3	---	---	---
4	7.2	7.1	7.2	7.5	7.4	7.5	7.3	7.2	7.3	---	---	---
5	7.3	7.2	7.3	7.4	7.4	7.4	7.3	7.2	7.3	---	---	---
6	7.3	7.3	7.3	---	---	---	7.3	7.3	7.3	---	---	---
7	7.4	7.3	7.3	---	---	---	7.3	7.2	7.3	---	---	---
8	7.4	7.3	7.4	---	---	---	7.3	7.2	7.3	---	---	---
9	7.4	7.4	7.4	7.4	7.3	7.3	7.3	7.2	7.3	---	---	---
10	7.4	7.3	7.4	7.4	7.3	7.3	---	---	---	---	---	---
11	7.4	7.3	7.4	7.4	7.3	7.4	---	---	---	7.3	7.2	7.3
12	7.4	7.3	7.4	7.4	7.3	7.3	---	---	---	7.2	7.2	7.2
13	7.4	7.4	7.4	7.4	7.2	7.3	---	---	---	7.2	7.2	7.2
14	7.5	7.4	7.4	7.4	7.3	7.4	---	---	---	7.2	7.2	7.2
15	7.5	7.4	7.5	7.4	7.3	7.4	---	---	---	7.2	7.2	7.2
16	7.5	7.4	7.4	7.4	7.3	7.3	---	---	---	7.2	7.2	7.2
17	7.5	7.4	7.5	7.4	7.3	7.4	---	---	---	7.3	7.2	7.2
18	7.4	7.4	7.4	7.4	7.2	7.3	---	---	---	7.3	7.2	7.2
19	7.4	7.4	7.4	7.4	7.2	7.3	7.4	7.3	7.3	7.3	7.2	7.2
20	7.5	7.4	7.4	7.3	7.1	7.3	7.4	7.3	7.4	7.3	7.2	7.2
21	7.5	7.3	7.4	7.3	7.2	7.3	7.4	7.3	7.4	7.2	7.2	7.2
22	7.5	7.4	7.4	7.4	7.2	7.3	7.5	7.3	7.4	---	---	---
23	7.5	7.4	7.5	7.3	7.2	7.3	7.4	7.3	7.4	---	---	---
24	7.5	7.4	7.5	7.2	7.2	7.2	7.5	7.4	7.4	---	---	---
25	7.5	7.4	7.4	7.2	7.1	7.1	7.4	7.3	7.4	---	---	---
26	7.5	7.4	7.4	7.1	7.1	7.1	---	---	---	---	---	---
27	7.5	7.4	7.4	7.1	7.0	7.1	---	---	---	---	---	---
28	7.5	7.4	7.4	7.1	7.0	7.1	---	---	---	---	---	---
29	---	---	---	7.2	7.1	7.1	---	---	---	---	---	---
30	---	---	---	7.2	7.1	7.2	---	---	---	---	---	---
31	---	---	---	7.2	7.2	7.2	---	---	---	7.4	7.3	7.4
MONTH	7.5	7.1	7.4	7.5	7.0	7.3	7.5	7.2	7.3	7.4	7.2	7.2

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

PH (UNITS), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.4	7.2	7.3	7.1	7.1	7.1				---	---	---
2	7.3	7.2	7.2	7.1	7.1	7.1				---	---	---
3	7.2	7.0	7.1	7.2	7.1	7.1				---	---	---
4	---	---	---	7.2	7.1	7.2				---	---	---
5	---	---	---	7.2	7.1	7.2				---	---	---
6	---	---	---	7.2	7.1	7.2				---	---	---
7	---	---	---	7.2	7.1	7.1				---	---	---
8	---	---	---	7.2	7.1	7.1				---	---	---
9	---	---	---	7.1	7.1	7.1				---	---	---
10	---	---	---	7.2	7.1	7.2				---	---	---
11	---	---	---	7.2	7.1	7.1				---	---	---
12	---	---	---	7.2	7.1	7.1				---	---	---
13	7.1	7.1	7.1	7.2	7.1	7.2				---	---	---
14	7.1	7.1	7.1	7.2	7.1	7.2				---	---	---
15	7.1	7.1	7.1	7.2	7.1	7.2				---	---	---
16	7.2	7.1	7.1	7.2	7.1	7.2				---	---	---
17	7.2	7.1	7.2	7.2	7.1	7.1				---	---	---
18	7.2	7.1	7.2	7.2	7.2	7.2				7.2	7.1	7.2
19	7.2	7.1	7.1	7.2	7.1	7.2				7.2	7.1	7.2
20	7.2	7.1	7.1	7.2	7.1	7.2				7.2	7.1	7.2
21	7.2	7.1	7.1	7.4	7.1	7.2				7.3	7.1	7.2
22	7.2	7.1	7.2	---	---	---				7.2	7.1	7.2
23	7.2	7.1	7.1	---	---	---				7.1	7.0	7.1
24	7.2	7.1	7.1	---	---	---				7.1	7.0	7.1
25	7.2	7.1	7.1	---	---	---				7.1	7.1	7.1
26	7.2	7.1	7.1	---	---	---				7.2	7.1	7.1
27	7.2	7.1	7.1	---	---	---				7.2	7.1	7.1
28	7.1	7.0	7.1	---	---	---				7.2	7.1	7.2
29	7.1	7.0	7.0	---	---	---				7.2	7.2	7.2
30	7.1	7.1	7.1	---	---	---				7.3	7.2	7.2
31	---	---	---	---	---	---				---	---	---
MONTH	7.4	7.0	7.1	7.4	7.1	7.2				7.3	7.0	7.2
YEAR	7.7	7.0	7.3									

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	10.0	10.5	---	---	---	---	---	---	3.0	2.5	2.5
2	11.0	10.0	10.5	---	---	---	---	---	---	3.0	2.5	2.5
3	11.5	9.0	10.5	---	---	---	---	---	---	3.0	3.0	3.0
4	10.5	9.0	9.5	---	---	---	---	---	---	3.5	3.0	3.0
5	10.0	8.5	9.0	---	---	---	---	---	---	4.0	3.5	3.5
6	10.0	8.5	9.0	---	---	---	---	---	---	4.0	3.5	4.0
7	11.0	9.5	10.5	---	---	---	---	---	---	4.0	3.5	4.0
8	10.5	9.5	10.0	---	---	---	---	---	---	4.5	4.0	4.0
9	11.0	9.5	10.5	6.5	6.0	6.0	---	---	---	4.5	4.0	4.0
10	9.5	8.0	8.5	6.5	6.0	6.5	---	---	---	4.5	4.0	4.5
11	10.0	9.0	9.5	7.0	6.5	7.0	---	---	---	4.5	4.0	4.5
12	9.5	8.5	9.0	7.5	7.0	7.0	---	---	---	4.0	4.0	4.0
13	10.5	9.5	10.0	7.0	7.0	7.0	---	---	---	4.5	4.0	4.0
14	11.0	10.0	10.5	7.0	6.5	7.0	---	---	---	5.0	4.5	4.5
15	11.0	9.5	10.0	6.5	6.5	6.5	---	---	---	5.0	5.0	5.0
16	12.0	9.5	11.0	6.5	6.0	6.5	---	---	---	5.0	4.5	4.5
17	11.5	10.5	11.0	6.0	5.5	5.5	---	---	---	4.5	4.0	4.5
18	11.0	9.5	10.5	5.0	4.5	5.0	---	---	---	4.5	4.5	4.5
19	11.0	9.5	10.5	4.5	4.0	4.0	---	---	---	5.0	4.5	5.0
20	11.5	9.5	10.5	4.0	3.5	3.5	---	---	---	5.5	5.0	5.0
21	11.0	10.5	11.0	3.0	2.5	3.0	---	---	---	6.0	5.5	5.5
22	11.0	10.5	10.5	4.0	3.0	3.5	---	---	---	5.5	4.5	5.0
23	11.5	11.0	11.0	6.5	3.5	4.5	---	---	---	4.5	4.0	4.5
24	11.0	10.0	10.5	---	---	---	---	---	---	4.5	4.0	4.0
25	10.0	9.5	10.0	---	---	---	---	---	---	4.0	4.0	4.0
26	11.0	9.0	9.5	---	---	---	---	---	---	4.5	4.0	4.5
27	11.5	9.5	10.0	6.0	6.0	6.0	---	---	---	4.5	4.0	4.0
28	12.0	9.5	10.5	6.0	5.5	5.5	---	---	---	4.5	4.5	4.5
29	10.0	9.0	9.5	---	---	---	---	---	---	5.0	4.0	4.5
30	12.0	9.0	10.0	---	---	---	4.5	4.0	4.5	4.0	3.5	4.0
31	11.5	9.0	10.0	---	---	---	4.0	3.0	3.5	3.5	3.5	3.5
MONTH	12.0	8.0	10.0	7.5	2.5	5.5	4.5	3.0	4.0	6.0	2.5	4.0

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	3.0	3.0	4.5	4.0	4.0	7.0	6.0	6.5	---	---	---
2	3.5	3.0	3.0	4.5	4.0	4.0	7.0	6.0	6.5	---	---	---
3	4.5	3.5	4.0	4.0	3.5	4.0	7.5	6.5	7.0	---	---	---
4	4.5	4.0	4.5	4.5	4.0	4.0	7.0	6.5	7.0	---	---	---
5	5.0	4.5	5.0	5.5	4.5	4.5	7.5	6.0	6.5	---	---	---
6	5.5	5.0	5.5	---	---	---	7.5	5.5	6.5	---	---	---
7	5.5	4.5	5.0	---	---	---	8.0	6.0	7.0	---	---	---
8	5.0	4.5	4.5	---	---	---	8.5	7.0	7.5	---	---	---
9	5.0	4.5	5.0	---	---	---	---	---	---	---	---	---
10	4.5	4.0	4.5	---	---	---	---	---	---	---	---	---
11	4.0	3.5	4.0	---	---	---	---	---	---	---	---	---
12	3.5	3.0	3.5	---	---	---	---	---	---	9.0	7.5	8.0
13	4.0	3.0	3.5	---	---	---	---	---	---	9.0	8.0	8.5
14	4.0	3.5	4.0	---	---	---	---	---	---	8.0	7.5	8.0
15	4.5	4.0	4.5	---	---	---	---	---	---	8.0	7.5	8.0
16	4.5	4.0	4.0	---	---	---	---	---	---	9.5	8.0	8.5
17	4.0	3.5	4.0	---	---	---	---	---	---	10.0	8.5	9.0
18	5.0	4.0	4.5	---	---	---	---	---	---	10.0	9.0	9.5
19	6.5	5.0	5.5	---	---	---	---	---	---	---	---	---
20	6.0	5.5	5.5	---	---	---	9.0	8.0	8.5	---	---	---
21	6.0	5.0	5.5	---	---	---	9.0	7.5	8.0	---	---	---
22	6.0	5.0	5.5	---	---	---	8.0	6.5	7.5	---	---	---
23	6.0	5.0	5.5	---	---	---	9.5	6.5	8.0	---	---	---
24	5.0	4.5	5.0	---	---	---	9.5	8.5	9.0	---	---	---
25	5.0	4.5	5.0	---	---	---	---	---	---	---	---	---
26	5.5	4.5	5.0	---	---	---	---	---	---	---	---	---
27	5.0	4.0	4.5	---	---	---	---	---	---	---	---	---
28	4.5	4.0	4.0	---	---	---	---	---	---	---	---	---
29	---	---	---	7.0	6.0	6.5	---	---	---	---	---	---
30	---	---	---	7.5	6.5	7.0	---	---	---	---	---	---
31	---	---	---	7.5	5.5	6.5	---	---	---	---	---	---
MONTH	6.5	3.0	4.5	7.5	3.5	5.0	9.5	5.5	7.5	10.0	7.5	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	11.0	12.0	12.5	11.5	12.0				---	---	---
2	12.5	11.5	12.0	12.0	11.0	11.5				---	---	---
3	---	---	---	10.5	10.5	10.5				---	---	---
4	---	---	---	10.5	10.0	10.0				---	---	---
5	---	---	---	11.5	10.0	10.5				---	---	---
6	---	---	---	12.5	10.5	11.0				---	---	---
7	---	---	---	13.5	11.5	12.5				---	---	---
8	---	---	---	13.0	11.5	12.5				---	---	---
9	---	---	---	11.5	11.0	11.5				---	---	---
10	---	---	---	11.0	10.5	10.5				---	---	---
11	---	---	---	11.0	10.5	10.5				---	---	---
12	---	---	---	13.0	10.0	11.5				---	---	---
13	10.5	9.0	9.5	14.5	12.5	13.5				---	---	---
14	11.0	9.5	10.0	14.5	13.5	14.0				---	---	---
15	10.5	9.5	10.0	13.5	12.5	13.5				---	---	---
16	10.0	9.0	9.0	12.5	11.5	11.5				---	---	---
17	12.5	9.0	10.5	12.5	10.5	11.5				---	---	---
18	14.0	11.5	12.5	13.5	11.5	12.0				12.0	11.0	11.5
19	13.0	11.5	12.0	14.0	12.5	13.5				12.5	10.5	11.5
20	13.0	11.5	12.0	14.5	13.5	14.0				12.0	10.5	11.5
21	12.5	12.0	12.0	---	---	---				11.0	10.5	11.0
22	12.0	11.0	11.5	---	---	---				11.0	10.5	11.0
23	11.0	10.0	10.5	---	---	---				10.5	10.0	10.0
24	11.0	10.0	10.5	---	---	---				11.5	10.0	11.0
25	10.5	10.0	10.0	---	---	---				12.5	11.0	12.0
26	12.5	9.5	11.0	---	---	---				13.0	11.5	12.0
27	14.0	12.0	13.0	---	---	---				13.0	12.5	12.5
28	14.0	12.5	13.0	---	---	---				12.0	11.5	12.0
29	13.0	11.0	12.0	---	---	---				12.5	11.0	11.5
30	12.0	10.5	11.0	---	---	---				12.0	11.0	11.5
31	---	---	---	---	---	---				---	---	---
MONTH	14.0	9.0	11.0	14.5	10.0	12.0				13.0	10.0	11.5
YEAR	14.5	2.5	8.0									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.1	10.7	10.9	---	---	---	---	---	---	12.8	12.8	12.8
2	11.1	10.8	10.9	---	---	---	---	---	---	12.8	12.7	12.7
3	11.1	10.8	10.9	---	---	---	---	---	---	12.7	12.5	12.6
4	11.3	10.9	11.1	---	---	---	10.7	10.0	10.3	12.6	12.4	12.5
5	11.3	11.1	11.2	---	---	---	11.1	10.0	10.5	12.4	11.4	12.2
6	11.4	10.9	11.1	---	---	---	---	---	---	12.5	12.1	12.3
7	11.2	10.8	11.0	---	---	---	---	---	---	12.5	12.0	12.4
8	11.1	10.7	10.9	11.9	11.8	11.8	---	---	---	12.5	12.4	12.4
9	11.1	10.8	10.9	11.8	11.8	11.8	---	---	---	12.4	12.3	12.4
10	11.5	11.1	11.2	11.9	11.6	11.8	---	---	---	12.3	12.2	12.3
11	11.4	10.9	11.1	11.6	11.4	11.5	---	---	---	12.3	10.4	12.0
12	11.3	10.9	11.1	11.4	11.4	11.4	---	---	---	10.2	9.5	9.8
13	11.3	10.7	11.0	11.4	11.4	11.4	---	---	---	11.3	9.9	10.4
14	11.1	10.8	10.9	11.4	11.2	11.3	---	---	---	12.1	11.4	12.0
15	11.2	10.8	10.9	11.6	11.4	11.5	---	---	---	12.1	12.0	12.0
16	11.1	10.8	10.9	11.5	11.4	11.5	---	---	---	12.2	12.0	12.1
17	11.1	10.6	10.8	11.6	11.5	11.5	---	---	---	12.3	12.2	12.2
18	11.2	10.8	11.0	11.7	11.6	11.6	---	---	---	12.3	12.1	12.2
19	11.2	10.8	10.9	11.8	11.7	11.7	---	---	---	12.2	12.1	12.1
20	11.1	10.8	10.9	11.8	11.8	11.8	---	---	---	12.2	12.0	12.1
21	11.0	10.7	10.8	---	---	---	---	---	---	12.1	12.0	12.0
22	11.1	10.7	10.9	---	---	---	---	---	---	12.3	12.2	12.2
23	10.9	10.6	10.8	---	---	---	---	---	---	12.5	12.3	12.4
24	10.8	10.6	10.7	---	---	---	---	---	---	12.5	12.3	12.4
25	10.8	10.7	10.8	---	---	---	---	---	---	12.4	12.3	12.3
26	10.8	10.5	10.7	---	---	---	---	---	---	12.3	12.2	12.2
27	---	---	---	---	---	---	---	---	---	12.4	12.3	12.3
28	---	---	---	---	---	---	---	---	---	12.3	12.1	12.2
29	---	---	---	---	---	---	---	---	---	12.3	12.1	12.2
30	---	---	---	---	---	---	12.5	12.3	12.4	12.4	12.2	12.3
31	---	---	---	---	---	---	12.8	12.4	12.6	12.4	12.2	12.3
MONTH	11.5	10.5	10.9	11.9	11.2	11.6	12.8	10.0	11.5	12.8	9.5	12.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	12.3	12.3	12.3	12.0	11.9	12.0	11.7	11.3	11.5	---	---	---
2	12.4	12.3	12.3	12.1	11.9	12.0	11.7	11.6	11.6	---	---	---
3	12.3	12.2	12.2	12.1	12.0	12.0	11.6	11.4	11.5	---	---	---
4	12.3	12.1	12.2	12.0	11.8	11.9	11.6	11.3	11.4	---	---	---
5	12.1	12.0	12.0	11.8	11.7	11.7	11.7	11.5	11.6	---	---	---
6	12.0	11.9	12.0	---	---	---	11.9	11.7	11.8	---	---	---
7	12.1	11.9	12.0	---	---	---	11.8	11.6	11.7	---	---	---
8	12.1	12.0	12.1	---	---	---	11.7	11.4	11.5	---	---	---
9	12.2	12.0	12.1	---	---	---	11.6	11.4	11.5	---	---	---
10	12.3	12.2	12.3	---	---	---	---	---	---	---	---	---
11	12.3	12.3	12.3	---	---	---	---	---	---	11.7	11.5	11.6
12	12.3	12.3	12.3	---	---	---	---	---	---	11.7	11.5	11.6
13	12.4	12.3	12.3	---	---	---	---	---	---	11.5	11.0	11.2
14	12.3	12.2	12.3	---	---	---	---	---	---	11.2	11.1	11.2
15	12.3	12.2	12.3	---	---	---	---	---	---	11.3	11.1	11.2
16	12.3	12.3	12.3	---	---	---	---	---	---	11.6	11.1	11.4
17	12.4	12.3	12.3	---	---	---	---	---	---	11.6	11.2	11.4
18	12.4	12.1	12.2	---	---	---	---	---	---	11.4	10.9	11.1
19	12.1	11.9	12.0	---	---	---	11.5	11.3	11.4	10.9	10.3	10.6
20	12.1	12.0	12.0	---	---	---	11.7	11.4	11.5	10.8	10.0	10.3
21	12.2	12.0	12.1	---	---	---	11.8	11.4	11.6	---	---	---
22	12.2	12.1	12.1	---	---	---	12.2	11.5	11.7	---	---	---
23	12.2	12.0	12.1	---	---	---	12.2	11.8	12.0	---	---	---
24	12.3	12.1	12.2	---	---	---	11.8	11.3	11.6	---	---	---
25	12.3	12.2	12.2	---	---	---	---	---	---	---	---	---
26	12.3	12.2	12.2	---	---	---	---	---	---	---	---	---
27	12.0	11.9	11.9	---	---	---	---	---	---	---	---	---
28	12.0	11.9	12.0	12.0	11.6	11.7	---	---	---	---	---	---
29	---	---	---	12.0	11.6	11.8	---	---	---	---	---	---
30	---	---	---	11.7	11.4	11.5	---	---	---	---	---	---
31	---	---	---	11.8	11.7	11.8	---	---	---	11.1	11.0	11.0
MONTH	12.4	11.9	12.2	12.1	11.4	11.8	12.2	11.3	11.6	11.7	10.0	11.2

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.9	10.4	10.7	10.5	10.3	10.4				---	---	---
2	10.6	10.2	10.4	10.4	10.2	10.3				---	---	---
3	10.3	10.1	10.2	10.5	10.4	10.5				---	---	---
4	---	---	---	10.6	10.5	10.6				---	---	---
5	---	---	---	10.6	10.4	10.5				---	---	---
6	---	---	---	10.5	10.1	10.3				---	---	---
7	---	---	---	10.1	9.7	9.8				---	---	---
8	---	---	---	10.1	9.7	9.9				---	---	---
9	---	---	---	10.4	10.1	10.2				---	---	---
10	---	---	---	10.3	10.1	10.2				---	---	---
11	---	---	---	10.3	10.2	10.3				---	---	---
12	---	---	---	10.4	9.8	10.2				---	---	---
13	11.0	10.8	10.9	10.0	9.7	9.8				---	---	---
14	10.9	10.6	10.7	10.1	9.8	10.0				---	---	---
15	10.7	10.4	10.6	10.6	10.2	10.3				---	---	---
16	11.5	10.7	10.9	11.0	10.9	11.0				---	---	---
17	11.5	10.6	11.1	11.2	11.0	11.1				---	---	---
18	11.3	10.6	10.9	11.1	10.7	10.9				11.7	11.5	11.6
19	11.4	10.7	11.0	10.6	10.3	10.4				11.7	11.2	11.4
20	11.0	10.6	10.8	10.3	10.0	10.1				11.2	10.8	11.0
21	10.8	10.5	10.7	---	---	---				11.1	10.7	10.9
22	11.0	10.5	10.7	---	---	---				10.8	10.6	10.7
23	11.1	10.8	11.0	---	---	---				10.8	10.5	10.7
24	11.0	10.8	10.9	---	---	---				10.5	10.0	10.3
25	10.9	10.8	10.8	---	---	---				10.0	9.6	9.8
26	10.9	10.5	10.7	---	---	---				9.9	9.7	9.8
27	10.8	10.0	10.3	---	---	---				9.8	9.5	9.6
28	10.4	9.9	10.2	---	---	---				10.0	9.6	9.8
29	10.6	10.0	10.3	---	---	---				10.0	9.9	9.9
30	10.6	10.5	10.6	---	---	---				10.0	9.6	9.8
31	---	---	---	---	---	---				---	---	---
MONTH	11.5	9.9	10.7	11.2	9.7	10.3				11.7	9.5	10.4
YEAR	12.8	9.5	11.4									

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°26'42", long 122°20'03", in SE¼SE¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on draw rest of and 150 ft (46 m) downstream from bridge on former U.S. Highway 99, 1.5 mi (2.4 km) north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7 (25.3 km).

DRAINAGE AREA.--3,093 mi² (8,011 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary water-stage recorder in bridge pier 0.2 mi (0.3 km) downstream from base gage Dec. 3, 1957, to Oct. 15, 1964.

REMARKS.--Water discharge records good. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs, Baker Lake and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--38 years, 16,810 ft³/s (476.1 m³/s), 12,180,000 acre-ft (15,000 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144,000 ft³/s (4,080 m³/s) Feb. 11, 1951, elevation, 36.85 ft (11.232 m); minimum, 2,740 ft³/s (77.6 m³/s) Oct. 26, 1942, elevation, 7.37 ft (2.246 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft (11.3 m), from Great Northern Railway high-water profile, discharge 180,000 ft³/s (5,100 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,420 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Nov. 26	1700	52,000	1,473	24.76	7.547	Dec. 14	1630	60,100	1,702	26.53	8.086
Dec. 3	0400	*65,600	1,858	*27.59	8.409						

Minimum daily discharge, 4,250 ft³/s (120 m³/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5740	12700	25900	16300	13300	13000	17400	11400	15000	25600	13400	16800
2	4890	36300	49900	15800	14700	11300	16400	9700	18100	25000	15400	26800
3	5330	22700	60300	16000	16300	11000	15500	10000	21800	26700	15900	21000
4	4250	16600	41000	19100	16000	10600	14500	9800	25000	24500	15300	15900
5	4470	14300	29000	21000	14300	8410	14200	9300	27700	23800	14800	15000
6	4860	13200	25100	21100	15100	8980	14900	8270	28300	20700	13200	16500
7	5480	14100	26400	19300	16800	12000	13500	7730	25900	20200	11900	16100
8	4800	13100	23300	22200	17300	14900	12000	8780	24500	19500	12200	14700
9	5740	12500	22500	23800	16200	13000	10300	10400	23500	18300	12500	14300
10	5300	16700	23600	21300	16100	12000	11700	13500	24100	18600	12000	15400
11	4970	18800	41600	19800	15400	12300	12300	11700	17800	17600	13300	18700
12	4800	17500	46700	18800	14500	12200	12200	12100	17000	14600	12000	17100
13	5680	17600	42800	17600	14400	10800	11400	11700	19400	13800	9680	15200
14	7220	19900	55400	16900	12100	12800	11200	16000	17000	15400	8390	13500
15	6300	20000	50200	16200	12800	11500	9410	16700	17800	17000	13100	12500
16	7240	16900	39300	15600	11700	9900	9110	16500	15800	18000	15300	12600
17	7220	15800	30500	16600	11800	9920	10700	14800	14000	21000	13800	13000
18	5960	14200	26600	16000	10500	10000	9990	13300	13500	19200	12800	13400
19	5880	13100	24400	15100	7860	9460	8910	12600	14800	18200	11700	11700
20	6890	12000	22000	13700	8970	9690	9550	14700	17500	16900	12300	10700
21	6850	12200	19900	12100	10600	10100	11000	17000	19000	15600	11600	10300
22	6800	12000	18800	14600	10900	10800	11100	17400	19800	16000	10500	13900
23	6990	11000	17800	13700	12000	11700	10500	16000	18200	18400	10000	24000
24	8040	11500	17800	14900	13600	15900	9560	13200	14500	18000	10000	21800
25	11300	12300	16200	14500	14000	18500	8600	11100	13300	18000	11000	18200
26	12600	42800	15200	14700	13900	23600	8740	11400	11800	16700	11800	15700
27	10800	33000	15900	15700	13800	21400	11600	11800	14700	17800	10000	14600
28	9220	28000	16500	13300	12700	23300	14300	12400	18900	17100	8270	14100
29	9400	32100	17400	12700	---	21500	13500	12300	25600	14700	7060	15400
30	11900	28300	17700	12300	---	19100	11500	11600	27400	11700	8240	13300
31	12500	---	16900	12800	---	20100	---	14300	---	10500	11000	---
TOTAL	219420	561200	896600	513500	377630	419760	355570	387480	581700	569100	368440	472200
MEAN	7078	18710	28920	16560	13490	13540	11850	12500	19390	18360	11890	15740
MAX	12600	42800	60300	23800	17300	23600	17400	17400	28300	26700	15900	26800
MIN	4250	11000	15200	12100	7860	8410	8600	7730	11800	10500	7060	10300
AC-FT	435200	1113000	1778000	1019000	749000	832600	705300	768600	1154000	1129000	730800	936600

CAL YR 1977 TOTAL 5072990 MEAN 13900 MAX 60300 MIN 4250 AC-FT 10060000
WTR YR 1978 TOTAL 5722600 MEAN 15680 MAX 60300 MIN 4250 AC-FT 11350000

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1974 to current year.
WATER TEMPERATURE: July 1962 to August 1970, February 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since February 1974.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. In addition to the water-quality monitor record, samples were collected approximately once a month.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 95 micromhos observed Mar. 15, 1978; minimum, 25 micromhos July 7, 1975.
WATER TEMPERATURES: Maximum, 19.0°C Aug. 12, 1977; minimum, 1.0°C Jan. 28 to Feb. 1, 1969.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A water temperature of 17.8°C was observed on Aug. 3, 1961.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 95 micromhos observed Mar. 15; minimum recorded, 30 micromhos Nov. 26, Sept. 2.
WATER TEMPERATURES; Maximum, 17.0°C July 30, Aug. 8; minimum, 1.5°C Nov. 22, Jan. 1, 2.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
OCT , 1977												
12...	1040	4230	59	7.4	10.0	2	--	10.7	<4	E66	26	2
NOV												
17...	1300	15900	52	7.6	6.4	7	--	11.7	57	--	22	3
DEC												
13...	1055	42100	41	7.8	5.4	35	--	11.7	K150	K13	22	9
JAN , 1978												
18...	1050	16300	55	7.6	4.6	4	--	12.1	22	K40	28	5
FEB												
15...	1030	12100	65	7.8	4.6	2	--	12.1	K81	200	28	1
MAR												
15...	1015	11200	95	8.4	4.4	2	--	12.5	40	K32	48	11
APR												
18...	1100	8990	62	8.2	8.4	2	--	11.3	K110	K7	29	3
MAY												
16...	1030	16500	49	--	8.4	3	--	11.1	230	K140	26	6
JUN												
20...	1000	17300	36	7.6	--	--	2.0	10.3	25	K40	19	5
JUL												
19...	1015	17400	44	--	13.6	--	3.0	10.4	88	K80	20	3
AUG												
22...	1020	9650	47	7.3	12.8	--	4.6	10.0	31	76	19	2
SEP												
19...	0935	11200	46	8.3	10.8	--	2.8	10.6	44	730	24	6

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT , 1977												
12...	7.6	1.7	1.5	11	.1	.7	29	0	24	1.8	5.3	1.2
NOV												
17...	6.5	1.4	1.4	12	.1	.5	23	0	19	.9	3.3	1.0
DEC												
13...	6.5	1.3	.9	8	.1	.5	15	0	12	.4	4.9	1.0
JAN , 1978												
18...	8.6	1.5	1.1	8	.1	.6	28	--	23	1.1	7.1	1.3
FEB												
15...	8.1	1.8	1.0	7	.1	.5	33	0	27	.8	6.1	1.1
MAR												
15...	17	1.3	1.8	8	.1	.2	45	0	37	.3	9.0	1.0
APR												
18...	8.5	1.9	1.8	12	.1	.6	32	0	26	.3	5.5	1.3
MAY												
16...	7.4	1.8	.7	5	.1	.5	24	--	20	--	6.6	.9
JUN												
20...	5.9	1.0	1.5	14	.2	.5	--	--	14	--	4.2	.6
JUL												
19...	6.3	1.0	1.2	11	.1	.6	--	--	17	--	3.1	.6
AUG												
22...	5.5	1.3	1.8	16	.2	.6	--	--	17	--	4.8	.9
SEP												
19...	7.5	1.2	1.7	13	.2	.5	--	--	18	--	9.5	.8

K Results based upon colony counts outside the ideal range.

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)
OCT , 1977												
12...	.0	7.2	36	40	.05	411	0	.26	.05	--	--	--
NOV												
17...	.0	7.0	38	32	.05	1630	12	.20	.01	--	--	--
DEC												
13...	.1	6.3	28	29	.04	3180	79	.26	.01	--	--	--
JAN , 1978												
18...	.1	8.0	37	42	.05	1630	16	.19	.01	--	--	--
FEB												
15...	.0	7.6	37	43	.05	1210	20	.13	.00	.00	.00	.00
MAR												
15...	.0	7.3	53	60	.07	1600	7	.10	.01	.00	.01	.00
APR												
18...	.0	7.7	44	43	.06	1070	2	.20	.01	.14	.15	.15
MAY												
16...	.0	6.6	34	36	.05	1520	9	.04	.00	.28	.28	.24
JUN												
20...	.1	5.8	28	28	.04	1310	7	.05	.01	.24	.25	.12
JUL												
19...	.1	6.7	23	30	.03	1080	21	.05	.00	.22	.22	.00
AUG												
22...	.0	6.1	29	31	.04	756	9	.05	.02	.46	.48	.34
SEP												
19...	.0	6.6	35	39	.05	1060	7	.07	.01	.29	.30	.02

DATE	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977											
12...	.07	--	--	.00	.00	--	1.4	.4	8	91	74
NOV											
17...	.02	--	--	.02	.01	1.9	--	--	65	2790	24
DEC											
13...	.09	--	--	.08	.00	2.6	--	--	237	26900	35
JAN , 1978											
18...	.25	--	--	.06	.01	--	2.5	.2	218	9590	22
FEB											
15...	.00	.13	.58	.02	.02	1.3	--	--	25	817	21
MAR											
15...	.01	.11	.49	.02	.00	1.0	--	--	15	454	26
APR											
18...	.00	.35	1.6	.03	.00	--	3.9	1.0	17	413	23
MAY											
16...	.04	.32	1.4	.04	.02	1.9	--	--	34	1520	25
JUN											
20...	.13	.30	1.3	.03	.01	1.2	--	--	63	2940	19
JUL											
19...	.23	.27	1.2	.02	.01	--	1.5	.2	53	2490	18
AUG											
22...	.14	.53	2.3	.01	.00	1.2	--	--	28	730	31
SEP											
19...	.28	.37	1.6	.00	.00	1.7	--	--	30	907	28

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUSPENDED TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)
OCT , 1977										
12...	1040	1	1	0	0	0	0	<10	<10	0
JAN , 1978										
18...	1050	1	0	1	0	0	0	1	0	1
APR										
18...	1100	4	2	2	0	0	0	1	0	1
JUL										
19...	1015	2	2	0	200	0	200	10	8	2

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
OCT , 1977										
12...	20	10	10	<50	<50	0	<10	<10	0	240
JAN , 1978										
18...	10	0	10	0	0	0	14	13	1	420
APR										
18...	10	10	0	4	4	0	10	7	3	1200
JUL										
19...	0	0	0	3	0	3	9	7	2	440

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)
OCT , 1977										
12...	--	130	<100	<100	0	30	0	30	.7	.7
JAN , 1978										
18...	--	70	5	0	5	20	10	10	.8	.8
APR										
18...	--	110	10	6	4	20	20	0	.2	.2
JUL										
19...	370	70	29	28	1	20	20	0	.0	.0

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1977										
12...	.0	0	0	0	<10	<10	0	10	0	10
JAN , 1978										
18...	.0	0	0	0	0	0	0	20	10	10
APR										
18...	.0	0	0	0	0	0	0	20	10	10
JUL										
19...	.0	0	0	0	20	20	0	20	10	10

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO MAY 1978

DATE TIME	NOV 17,77 1300		MAR 15,78 1015 •		MAY 16,78 1030	
TOTAL CELLS/ML	42		170		520	
DIVERSITY: DIVISION	0.0		0.0		0.7	
.CLASS	0.0		0.0		0.7	
..ORDER	0.0		0.7		0.7	
...FAMILY	1.9		2.6		1.8	
....GENUS	1.9		3.0		1.8	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	--	-	14	3
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	28#	17	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	9	6	14	3
...CYMBELLACEAE						
....CYMBELLA	7#	17	19	11	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	14#	33	28#	17	--	-
....HANNAEA	--	-	9	6	14	3
....SYNEDRA	--	-	9	6	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	7#	17	28#	17	27	5
...NAVICULACEAE						
....NAVICULA	--	-	28#	17	14	3
...NITZSCHIACEAE						
....NITZSCHIA	14#	33	9	6	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..HORMOGONALES						
...OSCILLATORIACEAE						
....PHORMIDIUM	--	-	--	-	270#	53
...NOSTOCACEAE						
....ANABAENA	--	-	--	-	160#	32

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%
Additional phytoplankton data available from District office in Tacoma.

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
FEB , 1978						
15...	1030	5.75	5.83	.130	.000	28
MAR						
15...	1015	9.68	10.2	.950	.110	28
APR						
18...	1100	11.5	12.7	1.76	.000	34
JUL						
19...	1015	10.6	11.4	.200	.200	29

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	52	46	49	45	42	44	45	36	41	53	49	50
2	53	49	51	42	32	35	41	34	36	53	49	51
3	53	50	52	42	35	38	43	36	41	54	51	52
4	54	50	53	46	42	44	46	42	44	52	46	48
5	54	52	53	47	45	46	47	43	45	47	45	46
6	54	52	53	48	46	47	48	45	47	49	46	47
7	54	47	50	48	44	46	47	44	46	50	48	49
8	55	50	53	48	43	45	47	45	46	49	43	46
9	55	47	50	49	44	47	48	46	47	45	39	43
10	55	50	51	48	42	44	48	44	46	46	44	45
11	56	49	50	43	37	41	45	33	38	51	46	48
12	59	50	51	44	41	43	42	34	38	50	47	49
13	56	48	50	45	40	43	44	39	41	53	49	51
14	53	42	45	46	42	43	44	38	40	56	53	54
15	53	44	47	48	40	43	45	38	41	58	53	55
16	52	46	48	49	44	45	46	42	45	60	51	56
17	51	46	48	50	43	45	47	45	46	62	51	55
18	51	46	48	49	43	45	48	44	46	64	52	55
19	50	46	48	47	44	45	49	45	47	61	53	56
20	50	45	48	47	44	46	53	47	50	59	54	56
21	51	48	50	46	44	45	54	51	52	60	56	58
22	52	50	51	48	44	46	54	50	52	57	54	55
23	52	49	51	50	47	48	52	48	50	57	54	56
24	51	49	50	50	46	48	53	50	52	59	54	56
25	49	44	47	50	39	46	53	51	52	58	53	56
26	45	41	43	43	30	34	53	48	50	58	53	56
27	47	44	46	39	32	34	52	48	50	58	51	55
28	49	47	48	37	34	36	53	48	50	61	55	58
29	48	46	48	42	36	39	53	48	49	60	55	58
30	47	42	44	45	37	40	52	48	50	61	55	57
31	44	43	44	---	---	---	52	48	50	59	56	57
MONTH	59	41	49	50	30	43	54	33	46	64	39	53

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	57	53	55	---	---	---	55	51	53	58	54	56
2	57	52	54	---	---	---	56	54	55	---	---	---
3	57	55	56	---	---	---	58	56	57	---	---	---
4	56	51	53	---	---	---	58	57	58	---	---	---
5	58	53	56	---	---	---	59	58	58	---	---	---
6	57	52	53	---	---	---	59	57	58	55	51	53
7	52	49	50	---	---	---	62	58	60	59	52	54
8	53	50	52	---	---	---	64	60	62	59	53	56
9	53	50	51	---	---	---	65	61	63	56	50	55
10	53	50	51	---	---	---	64	61	63	59	54	56
11	55	51	53	---	---	---	64	62	63	59	55	57
12	56	52	54	---	---	---	63	60	61	58	53	54
13	59	55	56	---	---	---	66	61	63	59	53	55
14	63	57	59	---	---	---	65	62	64	58	50	55
15	67	56	58	---	---	---	66	64	65	57	47	54
16	63	56	58	---	---	---	65	65	65	59	50	54
17	61	57	60	---	---	---	64	63	64	59	51	56
18	62	57	59	---	---	---	64	62	62	61	51	56
19	62	59	61	---	---	---	65	61	63	62	53	54
20	61	54	58	---	---	---	63	60	62	58	46	51
21	---	---	---	---	---	---	61	58	60	48	41	42
22	---	---	---	---	---	---	62	58	60	52	44	45
23	---	---	---	---	---	---	64	59	61	54	46	48
24	---	---	---	---	---	---	66	61	63	56	51	55
25	---	---	---	---	---	---	66	61	64	60	51	56
26	---	---	---	---	---	---	67	64	66	61	49	55
27	---	---	---	---	---	---	64	59	61	62	51	56
28	---	---	---	---	---	---	58	52	54	60	50	55
29	---	---	---	46	43	44	58	51	54	56	50	53
30	---	---	---	49	43	46	56	53	55	58	48	55
31	---	---	---	50	46	48	---	---	---	58	53	56
MONTH	67	49	55	50	43	46	67	51	61	62	41	54

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	58	50	55	---	---	---				42	37	39
2	57	47	52	---	---	---				38	30	34
3	48	41	44	---	---	---				36	32	33
4	44	38	40	---	---	---				37	36	37
5	40	35	36	---	---	---				39	38	39
6	43	34	37	---	---	---				40	38	39
7	44	35	39	---	---	---				40	38	39
8	46	35	41	---	---	---				41	38	40
9	47	34	40	---	---	---				43	39	41
10	47	33	41	---	---	---				43	41	42
11	49	32	43	---	---	---				40	34	37
12	51	34	43	---	---	---				42	38	40
13	52	34	48	---	---	---				45	42	43
14	51	37	46	---	---	---				48	45	46
15	51	42	46	---	---	---				51	47	49
16	51	46	48	---	---	---				49	46	48
17	52	46	50	---	---	---				48	46	47
18	52	46	50	43	40	42				48	45	46
19	45	41	43	44	40	42				53	47	50
20	40	39	40	---	---	---				54	48	51
21	41	38	40	---	---	---				55	50	52
22	42	39	40	---	---	---				52	43	48
23	45	41	42	---	---	---				42	33	37
24	47	42	44	---	---	---				39	33	37
25	44	43	45	---	---	---				42	39	40
26	48	43	45	---	---	---				45	42	43
27	47	42	45	---	---	---				47	44	45
28	45	39	43	---	---	---				48	44	46
29	45	38	41	---	---	---				50	46	48
30	46	37	43	---	---	---				55	49	51
31	---	---	---	---	---	---				---	---	---
MONTH	58	32	44	44	40	42				55	30	43
YEAR	67	30	49									

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.0	11.5	11.5	9.5	8.0	8.5	5.5	5.0	5.5	2.5	1.5	2.0
2	11.5	10.5	11.0	9.5	7.0	7.5	6.0	5.0	5.5	2.0	1.5	2.0
3	12.0	10.0	11.0	7.5	6.5	7.0	6.0	5.5	6.0	2.5	2.0	2.5
4	11.5	10.0	10.5	8.0	7.0	7.5	5.5	4.5	5.0	3.0	2.5	3.0
5	10.5	9.5	10.0	9.0	7.5	9.0	4.5	4.5	4.5	4.0	3.0	3.5
6	10.5	9.5	10.0	8.5	8.0	8.0	4.5	4.5	4.5	4.0	3.5	3.5
7	12.0	10.0	11.0	8.0	7.0	7.5	4.5	4.0	4.5	4.0	3.5	3.5
8	11.5	10.0	11.0	7.5	6.5	7.0	4.0	3.5	4.0	4.0	4.0	4.0
9	12.0	10.5	11.0	7.0	6.5	6.5	4.0	3.5	4.0	4.0	4.0	4.0
10	10.5	9.0	9.5	7.0	7.0	7.0	5.0	3.5	4.5	4.5	4.0	4.0
11	11.5	9.5	10.5	7.5	7.0	7.5	5.0	4.5	5.0	4.5	4.0	4.0
12	10.0	9.0	9.5	8.0	7.5	7.5	5.5	5.0	5.0	4.0	4.0	4.0
13	11.0	9.5	10.0	8.0	7.5	7.5	6.0	5.5	5.5	4.0	3.5	4.0
14	11.5	10.0	11.0	8.0	7.0	7.5	6.0	6.0	6.0	5.0	4.0	4.5
15	11.5	10.0	10.5	7.5	6.5	7.0	6.0	6.0	6.0	5.0	4.5	5.0
16	12.5	10.5	11.5	7.0	6.5	6.5	6.0	5.5	6.0	5.0	4.5	4.5
17	12.5	11.0	11.5	6.5	5.5	6.0	5.5	5.0	5.5	5.0	4.0	4.5
18	12.0	11.0	11.5	5.5	4.5	5.0	5.5	5.0	5.5	4.5	4.5	4.5
19	11.5	10.5	11.0	4.5	4.0	4.0	5.0	4.5	5.0	5.0	4.5	5.0
20	12.0	9.5	11.0	4.0	3.0	3.5	4.5	4.0	4.0	5.5	5.0	5.5
21	12.0	10.5	11.0	3.0	2.0	2.5	4.5	4.0	4.5	6.0	5.5	5.5
22	11.5	11.0	11.0	2.5	1.5	2.0	5.0	4.5	5.0	5.5	4.5	5.0
23	12.0	11.5	11.5	4.0	3.0	3.0	5.0	4.0	4.5	4.5	4.0	4.5
24	11.0	11.0	11.0	5.0	4.0	4.5	4.5	4.0	4.0	4.5	4.0	4.0
25	11.0	10.0	10.5	6.5	4.5	6.0	4.5	3.5	4.0	4.0	4.0	4.0
26	10.0	9.5	10.0	6.0	4.5	5.0	4.0	3.0	4.0	5.0	4.0	4.5
27	10.5	9.0	10.0	6.0	5.5	5.5	3.5	2.5	3.0	4.5	4.0	4.0
28	10.5	9.5	10.0	5.5	5.5	5.5	3.5	2.5	3.0	4.5	4.5	4.5
29	11.0	10.0	10.5	6.0	5.5	6.0	4.5	3.5	4.0	5.0	4.0	4.5
30	11.0	9.5	10.0	6.0	5.5	5.5	4.5	3.5	4.5	4.0	3.5	3.5
31	10.0	8.5	9.0	---	---	---	3.5	2.5	3.0	3.5	3.0	3.5
MONTH	12.5	8.5	10.5	9.5	1.5	6.0	6.0	2.5	4.5	6.0	1.5	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	3.0	3.0	---	---	---	8.0	7.5	8.0	10.5	7.5	9.0
2	3.5	3.0	3.0	---	---	---	8.0	6.0	7.0	---	---	---
3	5.0	3.5	4.0	---	---	---	9.0	7.0	8.0	---	---	---
4	5.0	4.0	4.5	---	---	---	8.5	7.5	8.0	---	---	---
5	5.5	5.0	5.0	---	---	---	8.5	6.0	7.5	---	---	---
6	6.5	5.5	6.0	---	---	---	7.5	6.0	6.5	12.0	8.5	10.5
7	6.0	5.5	5.5	---	---	---	8.5	6.0	7.0	13.0	10.0	11.5
8	6.0	5.0	5.5	---	---	---	8.5	7.0	7.5	13.0	10.5	12.0
9	6.0	4.5	5.5	---	---	---	9.5	6.5	8.0	12.0	10.5	11.0
10	5.0	4.0	4.5	---	---	---	9.5	7.5	8.5	10.5	9.5	10.0
11	4.5	3.5	4.0	---	---	---	9.0	7.5	8.0	9.5	9.0	9.0
12	4.0	3.0	3.5	---	---	---	8.5	5.5	7.0	9.5	8.5	9.0
13	4.5	3.5	4.0	---	---	---	8.0	6.5	7.0	9.5	9.0	9.0
14	5.0	4.0	4.5	---	---	---	7.5	7.0	7.0	9.0	8.5	8.5
15	5.0	4.5	4.5	---	---	---	8.5	6.0	7.5	8.5	8.5	8.5
16	5.0	4.0	4.5	---	---	---	8.0	7.0	7.5	10.0	8.5	9.0
17	4.5	4.0	4.0	---	---	---	7.5	5.5	7.0	10.0	9.0	9.5
18	5.0	4.5	5.0	---	---	---	8.5	7.0	8.0	12.0	9.5	10.5
19	7.0	5.0	6.0	---	---	---	9.0	7.5	8.0	13.5	11.0	12.0
20	6.5	5.5	6.0	---	---	---	9.0	8.0	8.5	13.5	11.0	12.5
21	---	---	---	---	---	---	9.0	7.5	8.0	12.0	10.0	11.0
22	---	---	---	---	---	---	7.5	6.5	7.0	10.0	9.0	9.5
23	---	---	---	---	---	---	9.0	6.0	7.5	10.0	8.5	9.5
24	---	---	---	---	---	---	10.0	8.0	9.0	11.0	9.0	10.0
25	---	---	---	---	---	---	10.0	8.0	9.0	10.0	9.0	9.5
26	---	---	---	---	---	---	10.5	8.5	9.5	10.5	9.5	10.0
27	---	---	---	---	---	---	9.5	8.0	9.0	10.0	9.5	10.0
28	---	---	---	---	---	---	8.0	7.5	8.0	10.5	9.5	10.0
29	---	---	---	8.5	6.5	7.0	9.0	7.0	8.0	11.5	9.5	10.5
30	---	---	---	9.0	7.5	8.0	10.5	7.5	9.0	12.0	10.0	10.5
31	---	---	---	8.5	6.0	7.5	---	---	---	13.0	10.5	11.5
MONTH	7.0	3.0	4.5	9.0	6.0	7.5	10.5	5.5	8.0	13.5	7.5	10.0

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	11.5	12.5	12.5	12.0	12.0	16.0	14.5	15.0	13.0	12.5	12.5
2	13.5	11.5	12.5	12.5	11.5	12.0	15.0	14.0	14.5	13.5	12.5	13.0
3	13.0	11.5	12.0	11.5	10.5	11.0	16.0	14.5	15.0	13.5	12.0	12.5
4	12.5	11.5	12.0	11.0	10.5	10.5	16.0	14.5	15.5	12.5	12.0	12.0
5	12.0	11.0	11.5	12.0	10.5	11.0	15.5	14.0	14.5	12.5	12.0	12.0
6	11.5	11.0	11.5	12.5	11.0	11.5	15.5	14.0	14.5	12.0	11.5	12.0
7	11.5	11.0	11.0	14.0	12.0	13.0	16.5	14.0	15.0	12.0	11.5	12.0
8	12.0	10.5	11.0	13.5	12.5	13.0	17.0	14.5	15.5	12.0	11.5	12.0
9	11.5	10.0	11.0	12.0	11.5	12.0	16.5	15.0	15.5	12.5	11.5	12.0
10	10.0	9.0	9.5	11.5	11.0	11.5	15.5	14.0	15.0	12.0	11.5	12.0
11	11.5	9.5	10.5	12.0	11.0	11.5	14.0	13.0	13.5	12.5	11.5	12.0
12	11.0	10.5	10.5	13.5	11.0	12.0	13.0	12.5	13.0	13.0	11.5	12.0
13	11.0	9.5	10.5	15.0	13.0	14.0	14.5	12.5	13.5	13.0	12.5	12.5
14	11.5	10.0	10.5	15.0	14.0	14.5	14.0	13.0	13.5	12.5	12.0	12.0
15	11.0	10.5	10.5	14.5	13.5	14.0	13.0	12.5	12.5	13.0	12.0	12.5
16	10.0	9.5	9.5	13.0	12.0	12.5	12.5	12.0	12.5	12.5	11.0	12.0
17	12.5	9.5	11.0	13.0	11.5	12.0	13.0	12.0	12.5	11.5	11.0	11.0
18	14.0	12.0	13.0	14.0	12.0	13.0	13.0	12.5	12.5	11.5	10.5	11.0
19	13.5	12.0	12.5	14.5	13.0	14.0	13.0	12.5	12.5	12.0	10.5	11.5
20	13.0	11.5	12.5	15.0	13.5	14.5	14.0	12.5	13.0	12.0	11.0	11.5
21	13.0	12.0	12.5	15.5	14.0	14.5	14.0	12.5	13.5	11.5	10.5	11.0
22	12.0	11.0	11.5	16.0	14.0	15.0	13.0	12.5	12.5	11.0	10.5	11.0
23	11.5	10.5	11.0	15.5	14.0	15.0	13.0	12.5	12.5	10.5	10.0	10.0
24	11.0	10.0	10.5	15.0	14.0	14.5	13.0	12.0	12.5	11.5	10.0	10.5
25	10.5	10.0	10.5	15.5	14.0	14.5	13.0	12.0	12.5	12.5	11.0	11.5
26	13.0	10.0	11.5	14.5	13.5	14.0	13.5	12.0	13.0	12.5	11.5	12.0
27	14.5	12.0	13.0	14.5	12.5	13.5	14.5	13.0	13.5	13.0	12.0	12.5
28	14.5	12.5	13.5	15.0	13.5	14.5	15.0	13.0	14.0	12.5	11.5	12.0
29	13.5	11.0	12.5	15.5	13.5	14.5	15.5	12.5	14.5	12.0	11.0	11.5
30	12.0	11.0	11.5	17.0	14.0	15.5	16.0	14.0	15.0	12.0	11.0	11.5
31	---	---	---	16.5	14.5	15.5	15.5	13.0	14.0	---	---	---
MONTH	14.5	9.0	11.5	17.0	10.5	13.0	17.0	12.0	14.0	13.5	10.0	12.0
YEAR	17.0	1.5	9.0									

12201500 SAMISH RIVER NEAR BURLINGTON, WA

LOCATION.--Lat 48°32'46", long 122°20'13", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110002, at Interstate Highway bridge, 500 ft (152 m) upstream from former gaging station, and 5.0 mi (8.0 km) north of Burlington.

DRAINAGE AREA.--87.8 mi² (227.4 km²).

PERIOD OF RECORD.--Water years 1959-70, 1973-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1973 to April 1974.

REMARKS.--Water discharge from rating; discharge value is good. Prior to October 1973 samples taken at site 0.2 mi (0.3 km) upstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1300	31	125	6.7	8.7	15	2
NOV							
29...	1300	990	68	7.0	7.3	95	35
DEC							
20...	1310	212	84	7.3	4.9	40	12
JAN , 1978							
17...	1500	240	89	7.4	5.9	30	5
FEB							
22...	1240	180	85	7.5	8.3	40	4
MAR							
07...	1415	175	112	8.2	8.0	25	4
APR							
04...	1405	236	82	7.4	9.0	40	3
MAY							
02...	1330	127	89	7.2	10.4	35	4
JUN							
20...	1435	50	112	7.8	16.4	30	2
JUL							
18...	1215	46	86	7.6	15.3	15	3
AUG							
08...	1245	31	121	7.6	18.0	55	2
SEP							
19...	1445	99	90	7.7	11.3	40	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	12.3	.85	.07	.02	.00	.00
NOV						
29...	12.3	2.1	.11	.11	.01	.03
DEC						
20...	12.8	1.4	.10	.04	.01	.03
JAN , 1978						
17...	12.2	1.3	.08	.03	.01	.03
FEB						
22...	12.2	1.1	.08	.02	.01	.03
MAR						
07...	11.9	1.1	.06	.02	.00	.00
APR						
04...	11.2	1.2	.09	.03	.01	.03
MAY						
02...	11.1	.97	.06	.02	.00	.00
JUN						
20...	10.5	.95	.06	.03	.01	.03
JUL						
18...	11.4	.76	.08	.02	.01	.03
AUG						
08...	11.2	.87	.10	.03	.01	.03
SEP						
19...	10.4	.68	.06	.03	.01	.03

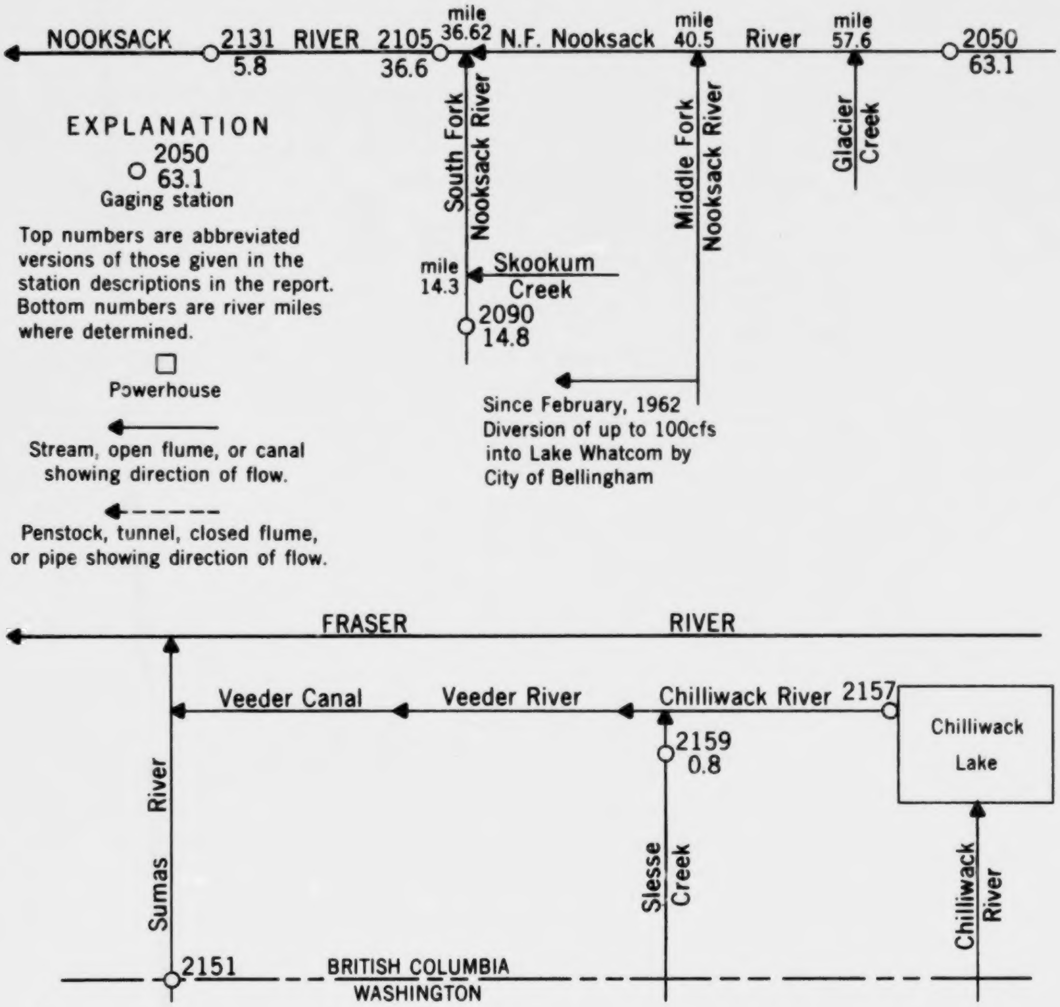
NOOKSACK
2131
5.8
RIVER
2105
36.6
mile
36.62
N.F. Nooksack
mile
40.5
River
mile
57.6
2050
63.1
South Fork Nooksack River
Middle Fork Nooksack River
Glacier Creek
mile
14.3
Skookum Creek
2090
14.8
Since February, 1962 Diversion of up to 100cfs into Lake Whatcom by City of Bellingham
EXPLANATION
2050
63.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
FRASER
RIVER
Veeder Canal
Veeder River
Chilliwack River
2157
Chilliwack Lake
2159
0.8
Sumas River
Slesse Creek
Chilliwack River
2151
BRITISH COLUMBIA
WASHINGTON

Figure 18. Gaging stations in Nooksack and Fraser River basins.

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE¼SW¼ sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi (0.3 km) downstream from Cascade Creek, 0.3 mi (0.5 km) downstream from Deadhorse Creek, 4.8 mi (7.7 km) east of Glacier, 5.5 mi (8.8 km) upstream from Glacier Creek, and at mile 63.1 (101.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.--October 1937 to current year. Published as Nooksack River above Cascade Creek, near Glacier 1937-58 and as Nooksack River below Cascade Creek, near Glacier 1958-66.

REVISED RECORDS.--WSP 1092: 1946.

GAGE.--Water-stage recorder. Altitude of gage is 1,245 ft (379.5 m), from river-profile map. Supplementary water-stage recorder on left bank at datum 1.19 ft (0.363 m) lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records good. No diversion above station. Some regulation at low flow by powerplant at Excelsior.

AVERAGE DISCHARGE.--41 years, 778 ft³/s (22.03 m³/s), 100.62 in/yr (2,556 mm/yr), 563,700 acre-ft/yr (695 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s (292 m³/s) Nov. 26, 1949, gage height, 10.50 ft (3.200 m), supplementary gage, from rating curve extended above 2,900 ft³/s (82.1 m³/s) on basis of contracted opening measurement at gage height 8.13 ft (2.478 m), supplementary gage; minimum, 60 ft³/s (1.70 m³/s) Mar. 12, 1969; minimum daily, 110 ft³/s (3.12 m³/s) Feb. 13, 1949.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s (102 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2000	*5,960	169	*8.60	2.621	Sept. 2	0900	4,900	139	7.86	2.396

Minimum discharge, 124 ft³/s (3.51 m³/s) Oct. 15, gage height, 2.08 ft (0.634 m) caused by regulation; maximum daily, 188 ft³/s (5.32 m³/s) Oct. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	1850	1110	310	269	238	739	540	1090	1460	884	2470
2	242	1790	2560	300	280	227	635	610	1440	1500	980	3550
3	221	980	1810	290	348	220	555	615	1820	1370	1100	1860
4	204	766	1230	330	356	217	505	570	2130	1310	1130	1490
5	194	655	938	510	414	213	477	495	2190	1240	908	1180
6	198	590	860	414	640	206	432	468	2000	1240	805	1190
7	211	580	777	391	550	530	396	490	1800	1380	833	962
8	242	486	650	1120	565	630	373	580	1640	1430	950	866
9	238	473	580	821	490	432	356	794	1730	1260	1010	1700
10	204	728	860	665	432	364	382	849	1410	1060	866	2010
11	194	799	1680	575	378	344	459	711	1180	884	766	1370
12	249	788	1300	500	344	312	405	650	1180	860	1060	1050
13	363	810	1460	459	324	300	373	914	1290	1070	690	896
14	248	980	2160	473	304	280	344	1270	1110	1200	630	788
15	253	733	1530	477	292	263	332	1020	992	1240	1160	854
16	273	625	1120	454	266	259	344	849	872	1170	860	739
17	227	535	890	423	255	259	324	755	902	974	680	665
18	211	463	750	391	245	296	336	761	1150	938	650	595
19	220	418	645	369	245	304	340	986	1160	962	722	535
20	198	378	570	350	248	312	382	1310	1230	998	625	505
21	188	340	525	505	266	320	344	1390	1320	1090	580	575
22	196	310	486	495	288	387	340	992	1320	1240	570	1140
23	916	290	441	410	344	520	328	783	1140	1270	510	1210
24	1500	300	405	369	332	665	316	680	1020	1200	849	968
25	1410	1090	378	364	308	1020	340	600	1020	1110	992	833
26	756	1810	348	352	288	938	473	585	1060	1260	706	788
27	576	1030	328	328	266	1090	675	755	1340	1270	605	833
28	501	986	316	320	252	1200	706	914	1660	986	605	690
29	774	1260	414	300	---	1090	640	772	1730	896	665	640
30	920	878	348	280	---	1010	585	685	1620	878	908	695
31	663	---	315	273	---	884	---	799	---	854	1690	---
TOTAL	13043	23721	27784	13618	9589	15330	13236	24192	41546	35600	25989	33647
MEAN	421	791	896	439	342	495	441	780	1385	1148	838	1122
MAX	1500	1850	2560	1120	640	1200	739	1390	2190	1500	1690	3550
MIN	188	290	315	273	245	206	316	468	872	854	510	505
CFSM	4.01	7.53	8.53	4.18	3.26	4.71	4.20	7.43	13.2	10.9	7.98	10.7
IN.	4.62	8.40	9.84	4.82	3.40	5.43	4.69	8.57	14.72	12.61	9.21	11.92
AC-FT	25870	47050	55110	27010	19020	30410	26250	47980	82410	70610	51550	66740

CAL YR 1977 TOTAL 243848 MEAN 668 MAX 2560 MIN 188 CFSM 6.36 IN 86.39 AC-FT 483700
WTR YR 1978 TOTAL 277295 MEAN 760 MAX 3550 MIN 188 CFSM 7.24 IN 98.24 AC-FT 550000

12209000 SOUTH FORK NOOKSACK RIVER NEAR WICKERSHAM, WA

LOCATION.--Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 0.5 mi (0.8 km) upstream from Skookum Creek, 3.7 mi (6.0 km) east of Wickersham, and at mile 14.8 (23.8 km).

DRAINAGE AREA.--103 mi^2 (267 km^2).

PERIOD OF RECORD.--October 1933 to October 1977, November 1977 (fragmentary), June to September 1978 (discontinued).

REVISED RECODS.--WSP 832: 1935-36.

GAGE.--Water-stage recorder. Altitude of gage is 385 ft (117.3 m), from river-profile map. Prior to July 9, 1934, nonrecording gage, at same site and datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--44 years, 741 ft^3/s (20.99 m^3/s), 97.70 in/yr (2,482 mm/yr), 536,900 acre-ft/yr (662 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft^3/s (547 m^3/s) Nov. 3, 1955, gage height, 13.40 ft (4.084 m), from rating curve extended above 11,000 ft^3/s (312 m^3/s); minimum, 66 ft^3/s (1.87 m^3/s) Oct. 9, 1940, Sept. 11-13, 1944; minimum gage height, 1.80 ft (0.549 m) Sept. 16, 17, 1973.

EXTREMES FOR CURRRENT YEAR.--Maximum discharge, 11,300 ft^3/s (320 m^3/s) Nov. 1, gage height, 10.09 ft (3.075 m); minimum, 108 ft^3/s (3.06 m^3/s) Aug. 9, 10, 11, gage height, 2.00 ft (0.610 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189								576	294	131	1510
2	182								672	326	131	1410
3	170								757	297	129	721
4	161								806	272	127	678
5	152								764	256	123	552
6	149								642	246	116	486
7	183								554	262	112	411
8	240								475	262	112	402
9	276								760	249	110	795
10	202								624	256	110	1210
11	175								564	233	114	810
12	170								505	205	313	526
13	385								636	211	209	418
14	237								465	220	177	358
15	194								416	220	910	386
16	176								372	211	394	386
17	164								364	191	251	480
18	155								400	177	199	378
19	155								380	180	270	323
20	147								372	177	215	293
21	148								384	177	180	364
22	146								376	174	164	2010
23	333								326	172	155	1640
24	763								300	165	161	839
25	1130								304	157	201	596
26	666								297	199	170	471
27	415								319	224	150	558
28	331								372	167	139	475
29	884								360	152	132	413
30	1930								311	143	127	374
31	951								---	138	182	---
TOTAL	11559	---	---	---	---	---	---	---	14453	6613	6014	20273
MEAN	373	---	---	---	---	---	---	---	482	213	194	676
MAX	1930	---	---	---	---	---	---	---	806	326	910	2010
MIN	146	---	---	---	---	---	---	---	297	138	110	293
CFSM	3.62	---	---	---	---	---	---	---	4.68	2.07	1.88	6.56
IN.	4.17	---	---	---	---	---	---	---	5.22	2.39	2.17	7.32
AC-FT	22930	---	---	---	---	---	---	---	28670	13120	11930	40210

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE¼SE¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft (240 m) downstream from South Fork, 1.1 m (1.8 km) southeast of Deming, and at mile 36.6 (58.9 km).

DRAINAGE AREA.--584 mi² (1,513 km²), includes 5 mi² (13 km²) in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964, discharges above 3,500 ft³/s (99.1 m³/s) only, October 1964 to current year. Published as "near Deming" 1910-11. Chemical analyses July 1959 to September 1971, October 1973 to September 1974, at site 5.7 mi (9.2 km) downstream from gaging station.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft (62.24 m), National Geodetic Vertical Datum of 1929. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi (1.8 km) downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi (8.0 km) downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good. Slight regulation by powerplant at Excelsior. Since February 1962, city of Bellingham diverts up to about 100 ft³/s (2.83 m³/s) from the Middle Fork for municipal use.

AVERAGE DISCHARGE.--36 years (water years 1936-57, 1965-78), 3,381 ft³/s (95.75 m³/s), 78.62 in/yr (1,997 mm/yr), 2,450,000 acre-ft/yr (3,020 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s (1,220 m³/s) Feb. 10, 1951, gage height, 15.69 ft (4.782 m), from rating curve extended above 25,000 ft³/s (708 m³/s); maximum gage height, 15.89 ft (4.843 m) Dec. 3, 1975; minimum recorded, 502 ft³/s (14.2 m³/s) Nov. 29, 1952, gage height, 3.72 ft (1.134 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft (6.1 m). Peak of Feb. 27, 1932, reached a stage of 16.8 ft (5.12 m), from floodmarks, discharge, 49,300 ft³/s (1,400 m³/s). Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2300	20,300	575	12.06	3.676	Dec. 14	0400	20,000	566	12.00	3.658
Dec. 2	1000	*23,200	657	*12.65	3.856						

Minimum discharge, 740 ft³/s (21.0 m³/s) Oct. 6, gage height, 4.65 ft (1.417 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	7270	6780	2370	2000	1760	3520	2110	2860	3000	1930	6200
2	981	9720	19100	2260	2460	1670	3150	2200	3410	3020	2080	7620
3	919	5430	10700	2200	3060	1600	2830	2290	3990	2890	2290	5920
4	873	4270	7220	2330	2950	1550	2610	2260	4460	2740	2400	5460
5	811	3810	5720	3870	3180	1510	2490	2130	4540	2640	2130	4550
6	748	3670	5300	3510	5100	1480	2280	2040	4240	2590	1860	4230
7	875	4270	5380	3160	4070	2020	2120	2020	3870	2730	1890	3770
8	1010	3400	4500	7150	4000	3150	2020	2200	3480	2850	2090	3330
9	1210	3440	4140	5600	3490	2280	1890	2600	3840	2680	2190	4940
10	937	5290	5560	4510	3090	1960	1880	2840	3570	2500	2000	5920
11	832	5180	10900	3900	2720	1850	2280	2620	3160	2200	1750	5100
12	846	5680	9180	3390	2480	1770	1960	2610	3070	1980	2530	3950
13	1780	5730	8350	3030	2300	1750	1820	2870	3360	2230	1950	3330
14	1180	6640	14600	3030	2180	1720	1790	4240	2920	2430	1640	2910
15	1030	5100	8730	3120	2120	1620	1770	3910	2630	2500	3690	2990
16	1040	4420	7130	2930	1960	1610	1830	3420	2390	2420	2910	2720
17	911	3980	5600	2680	1880	1660	1850	2970	2270	2170	2140	2700
18	849	3390	4740	2480	1860	1880	1950	2720	2690	2030	1890	2440
19	856	3010	4160	2330	1880	2000	2040	2970	2720	2090	2210	2150
20	799	2770	3680	2260	1920	1880	2270	3510	2680	2120	1910	1980
21	768	2530	3420	3430	2090	1840	2100	3770	2860	2250	1700	2080
22	768	2430	3210	4040	2190	2070	2180	3000	2890	2440	1630	5000
23	2170	2370	3030	3160	2570	2420	2180	2530	2620	2540	1530	6020
24	2930	2440	2880	2780	2460	3140	2050	2210	2380	2470	1930	4210
25	5730	5480	2700	2670	2150	5500	2000	2000	2380	2300	2240	3430
26	3490	8270	2550	2660	2010	5300	2220	2060	2340	2470	1850	3000
27	2400	5640	2460	2520	1870	5500	2560	2490	2690	2860	1620	3060
28	1940	7450	2360	2370	1840	6400	2870	3030	3220	2280	1590	2750
29	3890	8150	2450	2270	---	5540	2640	2520	3450	2030	1650	2460
30	5190	5660	2610	2120	---	4640	2310	2200	3150	1970	1760	2410
31	3950	---	2540	2030	---	4120	---	2310	---	1910	2840	---
TOTAL	52673	146890	181680	96180	71880	83270	67460	82730	94130	75330	63820	116630
MEAN	1699	4896	5861	3103	2567	2686	2249	2669	3138	2430	2059	3888
MAX	5730	9720	19100	7150	5100	6400	3520	4240	4540	3020	3690	7620
MIN	748	2370	2360	2030	1840	1480	1770	2000	2270	1910	1530	1980
CFSM	2.91	8.38	10.0	5.31	4.40	4.60	3.85	4.57	5.37	4.16	3.53	6.66
IN.	3.36	9.36	11.57	6.13	4.58	5.30	4.30	5.27	6.00	4.80	4.07	7.43
AC-FT	104500	291400	360400	190800	142600	165200	133800	164100	186700	149400	126600	231300

CAL YR 1977 TOTAL 1096553 MEAN 3004 MAX 19100 MIN 748 CFSM 5.14 IN 69.85 AC-FT 2175000
WTR YR 1978 TOTAL 1132673 MEAN 3103 MAX 19100 MIN 748 CFSM 5.31 IN 72.15 AC-FT 2247000

12210700 NOOKSACK RIVER AT NORTH CEDARVILLE, WA

LOCATION.--Lat 48°50'31", long 122°17'35", in SE¼NE¼ sec.28, T.39 N., Whatcom County, Hydrologic Unit 17110004, at State Highway 542 bridge, 4.0 mi (6.4 km) northwest of Deming, 5.7 mi (9.2 km) downstream from gaging station (12210500)..

DRAINAGE AREA.--584 mi² (1,513 km²).

PERIOD OF RECORD.--Water years 1959-1971, 1973-74, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good. Prior to 1978 water year data published as 12210500 Nooksack River at Deming.

COOPERATION.-Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1405	882	118	7.2	9.5	15	2
NOV							
29...	1400	8200	65	7.4	6.3	110	150
DEC							
20...	1430	3650	97	7.5	3.7	30	15
JAN , 1978							
17...	1550	2660	90	7.4	5.4	15	5
FEB							
22...	1410	2200	90	7.7	7.1	25	4
MAR							
07...	1510	1490	117	6.6	6.6	15	7
APR							
04...	1505	2590	94	7.6	7.7	15	4
MAY							
02...	1450	2220	90	7.7	10.9	15	7
JUN							
20...	1530	2660	74	7.8	14.0	10	11
JUL							
18...	1410	2030	85	7.7	14.4	10	1
AUG							
08...	1340	2010	95	9.1	14.6	25	85
SEP							
19...	1600	2130	91	7.5	12.4	5	4

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	12.4	.11	.05	.05	.00	.00
NOV						
29...	12.7	.39	.16	.37	.01	.03
DEC						
20...	13.4	.42	.08	.04	.01	.03
JAN , 1978						
17...	12.5	.35	.07	.02	.01	.03
FEB						
22...	12.6	.23	.08	.02	.00	.00
MAR						
07...	12.5	.24	.05	.03	.00	.00
APR						
04...	11.6	.23	.07	.02	.00	.00
MAY						
02...	11.3	.13	.06	.01	.00	.00
JUN						
20...	10.3	.07	.06	.02	.00	.00
JUL						
18...	11.8	.06	.11	.02	.01	.03
AUG						
08...	11.7	.09	.12	.49	.01	.03
SEP						
19...	10.5	.15	.03	.01	.00	.00

12213100 NOOKSACK RIVER AT FERNDALE, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE¼NW¼ sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft (91 m) downstream from highway bridge at Ferndale and 5.8 mi (9.3 km) upstream from mouth.

DRAINAGE AREA.--786 mi² (2,036 km²), of which 48.9 mi² (126.7 km²) is in Canada.

PERIOD OF RECORD.--October 1966 to current year. Chemical analyses October 1961 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft (1.405 m) National Geodetic Vertical Datum of 1929. Prior to July 18, 1968, at site 220 ft (67 m) upstream at datum 4.21 ft (1.283 m) higher.

REMARKS.--Records good except those for period of no gage-height record Oct. 1 to 23, which are fair. Slight regulation by powerplant at Excelsior. City of Bellingham diverts up to about 100 ft³/s (2.83 m³/s) at times from Middle Fork Nooksack River for municipal use.

AVERAGE DISCHARGE.--12 years, 4,042 ft³/s (114.5 m³/s), 69.84 in/yr (1,774 mm/yr), 2,928,000 acre-ft/yr (3,610 hm³/yr)

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) Dec. 3, 1975, gage height, 21.97 ft (6.696 m); minimum, 718 ft³/s (20.3 m³/s) Nov. 5, 1974, gage height, 3.03 ft (0.924 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*);

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0700	19,400	549	15.47	4.715	Dec. 11	2400	16,700	473	14.17	4.319
Dec. 3	0300	*23,900	677	*17.27	5.264	Dec. 14	1400	21,600	612	16.33	4.977

Minimum daily discharge, 850 ft³/s (24.1 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	4760	6670	2440	2280	1980	4620	2450	2910	3330	1810	6020
2	1060	14700	19900	2350	2530	1850	4100	2390	3550	3180	1920	8770
3	1000	6940	19200	2300	3400	1760	3790	2560	4300	3220	2120	7030
4	950	4820	10400	2500	3790	1710	3390	2500	5100	2960	2340	5490
5	900	3980	7310	4170	3820	1670	3260	2440	5500	2830	2180	4740
6	850	3640	6110	4230	5850	1630	3040	2290	5250	2740	1830	4010
7	1080	4250	6320	3220	5320	1800	2780	2220	4650	2820	1750	3800
8	1300	3510	5110	8000	5070	3430	2580	2280	4100	2990	1870	3150
9	1450	3160	4400	8400	4510	2720	2420	2610	4060	2900	2080	4170
10	1150	5140	4810	6490	4110	2380	2320	3120	4590	2670	2010	6280
11	920	5770	14400	5450	3490	2120	2570	2860	3640	2370	1720	6340
12	970	6210	14900	4650	3140	2110	2460	2880	3470	2070	2080	4370
13	2100	6190	11400	4090	2900	2070	2230	2820	3810	2170	2290	3580
14	1400	7780	19000	3960	2730	2100	2130	4510	3490	2420	1620	3060
15	1100	6360	15400	4180	2660	1940	2100	5070	3030	2520	3100	2910
16	1150	4950	11900	3910	2510	1840	2100	4210	2750	2490	3530	2820
17	1050	4400	8510	3520	2350	1860	2310	3590	2520	2280	2260	2680
18	980	3690	6790	3190	2260	1950	2220	3180	2790	2050	1850	2500
19	950	3150	5830	2980	2290	2190	2400	3230	2970	2050	1970	2200
20	890	2780	5020	2810	2320	2070	2620	3830	2890	2080	1940	2000
21	870	2460	4510	3460	2370	1980	2670	4390	3050	2170	1620	1960
22	860	2300	4130	5210	2540	2100	2540	3660	3120	2340	1540	4170
23	1850	2150	3800	4070	2700	2330	2760	3020	2940	2520	1420	7070
24	2580	2220	3450	3450	2960	3100	2520	2580	2590	2530	1480	4730
25	6790	3010	3220	3180	2560	5040	2350	2330	2490	2310	2120	3790
26	4410	12400	3000	3240	2390	7050	2440	2220	2490	2340	1840	3230
27	2880	6720	2810	3100	2210	5900	2710	2490	2690	2930	1530	3100
28	2190	8900	2650	2860	2100	8930	3140	3300	3250	2440	1400	3110
29	3670	11300	3010	2720	---	7920	3140	2980	3800	2080	1430	2660
30	5550	7550	3190	2520	---	6190	2720	2510	3490	1940	1520	2490
31	5530	---	2690	2370	---	5600	---	2430	---	1870	2120	---
TOTAL	59550	165190	239840	119020	87160	97240	82430	92950	105280	77610	60290	122230
MEAN	1921	5506	7737	3839	3113	3137	2748	2998	3509	2504	1945	4074
MAX	6790	14700	19900	8400	5850	8930	4620	5070	5500	3330	3530	8770
MIN	850	2150	2650	2300	2100	1630	2100	2220	2490	1870	1400	1960
CFSM	2.44	7.01	9.84	4.88	3.96	3.99	3.50	3.81	4.46	3.19	2.48	5.18
IN.	2.82	7.82	11.35	5.63	4.13	4.60	3.90	4.40	4.98	3.67	2.85	5.78
AC-FT	118100	327700	475700	236100	172900	192900	163500	184400	208800	153900	119600	242400

CAL YR 1977 TOTAL 1239920 MEAN 3397 MAX 19900 MIN 850 CFSM 4.32 IN 58.68 AC-FT 2459000
WTR YR 1978 TOTAL 1308790 MEAN 3586 MAX 19900 MIN 850 CFSM 4.56 IN 61.94 AC-FT 2596000

12213140 NOOKSACK RIVER AT BRENNAN, WA.

LOCATION.--Lat 48°49'10", long 122°34'43", in NW¼NE¼ sec.5, T.38 N., R.2 E., Whatcom County, Hydrologic Unit, 17110004, at rural avenue bridge, 0.6 mi (1.0 km) west of Brennan, 2 mi (3.2 km) south of Ferndale, 2 mi (3.2 km) north of Marietta, and 2.5 mi (4.0 km) downstream from gaging station (12213100).

DRAINAGE AREA.--About 790 mi^2 (2,046 km^2).

PERIOD OF RECORD.--Water years 1973, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)
OCT , 1977							
05...	0750	900	--	138	7.3	8.0	25
NOV							
30...	0730	--	8190	84	6.8	5.2	70
DEC							
21...	0820	--	4600	121	6.8	2.8	55
JAN , 1978							
18...	0835	--	3250	112	7.4	4.9	20
FEB							
23...	0800	--	2500	118	7.6	7.5	30
MAR							
08...	0755	--	3480	94	7.5	6.6	50
APR							
05...	0840	--	3300	111	7.6	7.4	40
MAY							
03...	0810	--	2550	108	7.1	10.8	15
JUN							
21...	0825	--	2910	85	7.0	15.4	15
JUL							
19...	0805	--	2000	85	7.3	16.1	15
AUG							
09...	0825	--	2100	96	7.8	14.0	40
SEP							
20...	0915	--	2030	102	7.7	11.6	5

DATE	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977							
05...	4	10.8	.08	.06	.04	.01	.03
NOV							
30...	72	12.4	.63	.16	.21	.01	.03
DEC							
21...	16	12.9	.68	.12	.05	.01	.03
JAN , 1978							
18...	5	12.2	.65	.11	.04	.01	.03
FEB							
23...	5	11.6	.43	.12	.03	.01	.03
MAR							
08...	20	11.8	.37	.15	.11	.01	.03
APR							
05...	7	11.2	.39	.10	.05	.01	.03
MAY							
03...	5	10.5	.24	.06	.03	.01	.03
JUN							
21...	8	9.5	.13	.03	.03	.01	.03
JUL							
19...	12	9.7	.12	.16	.03	.00	.00
AUG							
09...	64	10.0	.10	.05	.14	.01	.03
SEP							
20...	5	10.3	.20	.03	.03	.01	.03

12215100 SUMAS RIVER NEAR HUNTINGDON, BRITISH COLUMBIA

LOCATION.--Lat 49°00'09", long 122°13'50", on highway bridge at international boundary, 1.5 mi (2.4 km) east of Huntingdon.

DRAINAGE AREA.--57.6 mi² (149.2 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to December 1968, January 1970 to current year, in reports of Geological Survey, October 1935 to June 1949 (fragmentary gage heights only), October 1950 to September 1952 (gage heights only) and October 1952 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada.

GAGE.--Water-stage recorder.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--22 years (1953-68, 1971, 1974-78), 115 ft³/s (3.257 m³/s) 83,320 acre-ft/yr (103 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft³/s (46.7 m³/s) Dec. 3, 1975; maximum gage height, 13.50 ft (4.115 m) Feb. 11, 1951 (from high-water mark); minimum discharge, 1.1 ft³/s (0.031 m³/s) Aug. 28, 1958, gage height, 1.72 ft (0.524 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 587 ft³/s (16.6 m³/s) Dec. 12; minimum daily, 12 ft³/s (0.34 m³/s Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	82	250	98	113	91	154	82	52	35	20	44
2	32	188	538	118	107	88	141	81	51	35	18	72
3	31	168	580	118	148	85	148	84	49	35	16	86
4	31	88	341	123	244	83	132	88	48	32	14	78
5	31	66	243	127	269	82	122	86	47	32	14	72
6	31	62	206	150	275	80	114	81	46	30	16	58
7	32	64	225	140	286	87	107	76	44	26	19	53
8	32	60	209	180	249	120	100	72	44	24	16	50
9	33	62	155	343	239	111	95	72	46	29	13	50
10	32	123	146	350	204	97	92	72	49	33	12	57
11	31	156	340	323	174	96	91	71	48	30	14	78
12	31	135	587	281	152	106	88	70	48	30	22	73
13	33	117	472	241	138	110	85	73	58	28	31	60
14	33	108	513	243	128	127	85	85	56	27	27	53
15	32	106	572	268	124	111	88	89	52	26	32	49
16	31	98	562	237	118	101	90	91	51	24	40	45
17	31	88	462	192	111	96	100	84	49	28	34	45
18	30	77	328	164	107	93	95	77	47	23	31	46
19	31	66	274	149	106	90	93	72	46	21	32	43
20	30	56	239	138	103	86	96	67	44	20	32	42
21	30	45	211	155	103	83	106	64	43	18	30	41
22	30	44	191	211	102	81	105	63	41	18	29	46
23	30	42	174	186	111	83	113	63	40	19	28	73
24	32	39	154	156	120	92	108	60	39	21	30	77
25	34	80	143	144	108	112	98	60	40	16	30	63
26	38	294	135	155	102	170	91	60	41	16	28	55
27	37	307	128	161	97	159	87	60	38	24	28	52
28	34	274	122	148	94	232	87	63	36	25	27	63
29	39	303	133	141	---	273	91	60	34	23	27	57
30	61	266	143	130	---	226	87	57	35	22	26	52
31	71	---	122	121	---	185	---	54	---	23	28	---
TOTAL	1066	3664	8898	5691	4232	3636	3089	2237	1362	793	764	1733
MEAN	34.4	122	287	184	151	117	103	72.2	45.4	25.6	24.6	57.8
MAX	71	307	587	350	286	273	154	91	58	35	40	86
MIN	30	39	122	98	94	80	85	54	34	16	12	41
AC-FT	2110	7270	17650	11290	8390	7210	6130	4440	2700	1570	1520	3440

CAL YR 1977 TOTAL 36184 MEAN 99.1 MAX 694 MIN 14 AC-FT 71770
WTR YR 1978 TOTAL 37165 MEAN 102 MAX 587 MIN 12 AC-FT 73720

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

12215100 SUMAS RIVER NEAR HUNTINGDON, BRITISH COLUMBIA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology. Discharge rating curve furnished by Water Survey of Canada.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1500	31	280	7.4	10.7	50	5
NOV							
29...	1445	308	226	7.2	7.3	105	27
DEC							
20...	1505	233	271	7.6	3.2	85	11
JAN , 1978							
17...	1635	184	241	7.4	5.4	65	5
FEB							
22...	1440	102	218	7.7	9.5	35	5
MAR							
07...	1555	87	270	7.5	7.7	65	6
APR							
04...	1600	129	250	7.6	10.1	75	6
MAY							
02...	1530	80	250	7.7	14.3	80	9
JUN							
20...	1610	44	266	7.9	18.8	45	6
JUL							
18...	1445	21	223	8.0	18.0	40	6
AUG							
08...	1425	15	290	7.7	20.5	30	5
SEP							
19...	1640	43	265	7.6	12.6	20	5

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.4	1.0	.18	.09	.04	.12
NOV						
29...	8.7	2.5	.37	.28	.11	.34
DEC						
20...	10.9	2.1	.24	.12	.05	.15
JAN , 1978						
17...	--	2.0	.27	.12	.07	.21
FEB						
22...	10.4	1.6	.20	.08	.06	.18
MAR						
07...	10.1	1.6	.19	.08	.05	.15
APR						
04...	9.6	1.4	.22	.11	.06	.18
MAY						
02...	9.8	1.1	.24	.13	.05	.15
JUN						
20...	9.7	1.0	.12	.10	.06	.18
JUL						
18...	12.1	1.1	.28	.10	.07	.21
AUG						
08...	8.7	.93	.32	.13	.04	.12
SEP						
19...	9.1	.80	.20	.10	.06	.18

12215700 CHILLIWACK RIVER NEAR VEDDER CROSSING, BRITISH COLUMBIA

LOCATION.--Lat 49°05'02", long 121°27'24", at outlet of Chilliwack Lake 30 mi (48.3 km) upstream from Vedder Crossing.

DRAINAGE AREA.--131 mi^2 (339 km^2).

PERIOD OF RECORD.--October 1960 to current year in reports of Geological Survey. May 1923 to June 1951 and May 1957 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada. Prior to October 1969, published as 12214200.

GAGE.--Water-stage recorder.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--46 years (water years 1924-47, 1949-50, 1959-78) 672 ft^3/s (19.03 m^3/s) 486,900 acre-ft/yr (600 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,100 ft^3/s (116 m^3/s) June 10, 1972, gage height, 9.34 ft (2.847 m); maximum gage height, 9.53 ft (2.905 m) June 20, 1974; minimum daily discharge, 104 ft^3/s (2.95 m^3/s) Oct. 21, 1923 and on many days during months of February and March 1929, December 1936 and February 1937.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,100 ft^3/s (59.5 m^3/s) June 6, gage height, 7.65 ft (2.332 m); minimum daily, 172 ft^3/s (4.87 m^3/s) Oct. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	249	484	817	424	288	260	696	548	783	1420	731	596
2	237	743	919	401	290	255	684	562	880	1410	713	809
3	230	790	1060	389	290	249	665	580	1110	1400	705	934
4	223	769	1080	384	292	243	645	586	1530	1370	699	948
5	217	736	1050	382	291	241	626	580	1890	1340	689	931
6	210	697	1000	378	305	236	600	570	2080	1310	665	923
7	206	665	963	371	316	247	577	559	2070	1300	642	907
8	205	625	903	389	325	273	554	559	1990	1310	624	862
9	204	588	847	410	329	286	531	579	1920	1290	615	833
10	200	568	817	418	328	291	516	611	1830	1240	604	837
11	196	578	912	417	326	295	518	631	1670	1160	587	840
12	193	596	1030	412	321	296	511	639	1560	1080	581	820
13	196	614	1070	403	314	294	504	652	1450	1020	567	760
14	194	650	1240	396	307	292	492	695	1360	1000	543	690
15	192	657	1320	389	302	287	478	723	1270	999	548	660
16	190	650	1300	379	293	282	467	732	1180	995	573	675
17	188	626	1230	369	283	277	459	729	1100	986	575	630
18	185	595	1150	361	275	277	447	723	1070	952	555	590
19	182	561	1060	355	269	280	436	737	1070	924	550	550
20	178	526	980	349	264	282	430	801	1070	892	542	510
21	175	495	904	351	253	285	423	937	1100	873	522	500
22	172	462	834	361	253	295	414	1020	1120	869	500	505
23	183	434	772	356	260	311	406	996	1130	876	483	640
24	219	420	715	349	267	339	398	940	1110	878	472	780
25	362	431	664	344	269	387	390	878	1090	868	480	810
26	421	652	617	339	268	451	394	824	1060	865	479	780
27	430	749	574	332	266	514	428	789	1080	879	469	720
28	425	775	537	324	263	587	475	788	1170	862	454	690
29	428	815	509	315	---	634	512	786	1310	829	444	660
30	440	823	481	305	---	670	534	770	1390	793	439	610
31	445	---	451	295	---	692	---	760	---	757	478	---
TOTAL	7775	18774	27806	11447	8107	10608	15210	22284	40443	32747	17528	22080
MEAN	251	626	897	369	290	342	507	719	1348	1056	565	733
MAX	445	823	1320	424	329	692	696	1020	2080	1420	731	948
MIN	172	420	451	295	253	236	390	548	783	757	439	500
AC-FT	15420	37240	55150	22710	16080	21040	30170	44200	80220	64950	34770	43640

CAL YR 1977 TOTAL 200344 MEAN 549 MAX 1480 MIN 172 AC-FT 397400
WTR YR 1978 TOTAL 234729 MEAN 643 MAX 2080 MIN 172 AC-FT 465600

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

12215900 SLESSE CREEK NEAR VEDDER CROSSING, BRITISH COLUMBIA

LOCATION.--Lat 49°04'21", long 121°41'58", approximately 200 ft (61 m) upstream from unnamed creek, 0.8 mi (1.3 km) upstream from mouth and 13.5 mi (21.7 km) east of Vedder Crossing.

DRAINAGE AREA.--62.7 mi² (162.4 km²).

PERIOD OF RECORD.--October 1960 to November 1962, August 1963 to March 1964, and May 1964 to current year in reports of Geological Survey. March 1957 to September 1960 in reports of Department of Northern Affairs and National Resources, Canada. Prior to October 1969, published as 12214300.

GAGE.--Water-stage recorder. Prior to Aug. 1, 1963, at site 0.7 mi (1.1 km) downstream at different datum and Aug. 1, 1963 to Apr. 19, 1978, at site 300 ft (91 m) downstream at same datum.

COOPERATION.--Records furnished by Department of the Environment, Canada.

AVERAGE DISCHARGE.--15 years (water years 1960-62, 1965-74, 1977-78) 352 ft³/s (9.969 m³/s) 255,000 acre-ft/yr (314 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,860 ft³/s (109 m³/s) Oct. 21, 1963, gage height, 7.81 ft (2.380 m), minimum, 19.8 ft³/s (0.56 m³/s) Oct. 5, 1960, gage height, 2.24 ft (0.683 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,730 ft³/s (49.0 m³/s) Nov. 26, gage height, 5.57 ft (1.698 m); minimum daily, 67 ft³/s (1.90 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	751	508	115	127	133	410	305	599	641	255	715
2	82	756	1240	113	128	128	347	335	856	659	268	1040
3	75	460	939	111	142	125	291	324	1150	613	285	612
4	71	356	620	110	152	124	261	284	1350	584	279	495
5	68	305	489	125	183	121	235	243	1330	550	227	441
6	67	281	433	137	273	118	209	224	1090	542	200	455
7	77	279	376	133	246	208	195	239	934	610	200	370
8	101	239	314	370	234	259	189	294	813	598	221	316
9	95	236	281	297	213	196	182	418	869	510	225	393
10	78	312	368	256	190	173	207	438	712	420	195	496
11	76	343	706	230	172	164	257	363	571	354	179	405
12	106	382	638	206	160	153	221	321	561	347	203	333
13	167	386	689	189	152	146	203	423	575	423	155	289
14	110	477	1070	186	147	138	187	511	499	473	156	253
15	106	378	731	191	141	132	177	435	452	484	358	310
16	106	319	554	194	134	132	177	384	396	458	248	256
17	92	274	448	183	130	132	166	346	413	374	197	243
18	88	237	366	173	126	151	165	365	539	342	188	218
19	92	217	316	166	127	164	168	524	541	346	217	199
20	82	194	277	160	134	164	170	745	597	351	182	185
21	78	190	254	204	146	179	163	779	635	379	170	198
22	77	170	231	210	156	222	159	532	605	413	159	427
23	251	150	211	181	191	267	151	399	530	417	150	507
24	547	130	192	169	183	314	150	335	489	383	178	422
25	619	601	181	164	168	449	170	289	458	356	233	350
26	370	1050	168	159	156	496	269	269	476	395	184	305
27	274	591	157	152	146	615	407	306	646	393	163	298
28	229	545	151	146	140	641	407	389	837	304	161	251
29	295	709	162	141	---	574	375	340	819	280	167	227
30	341	512	150	133	---	565	333	308	717	261	222	229
31	281	---	126	132	---	493	---	384	---	250	383	---
TOTAL	5188	11830	13346	5436	4597	7876	7001	11851	21059	13510	6608	11238
MEAN	167	394	431	175	164	254	233	382	702	436	213	375
MAX	619	1050	1240	370	273	641	410	779	1350	659	383	1040
MIN	67	130	126	110	126	118	150	224	396	250	150	185
AC-FT	10290	23460	26470	10780	9120	15620	13890	23510	41770	26800	13110	22290

CAL YR 1977 TOTAL 106000 MEAN 290 MAX 1300 MIN 67 AC-FT 210300
WTR YR 1978 TOTAL 119540 MEAN 328 MAX 1350 MIN 67 AC-FT 237100

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

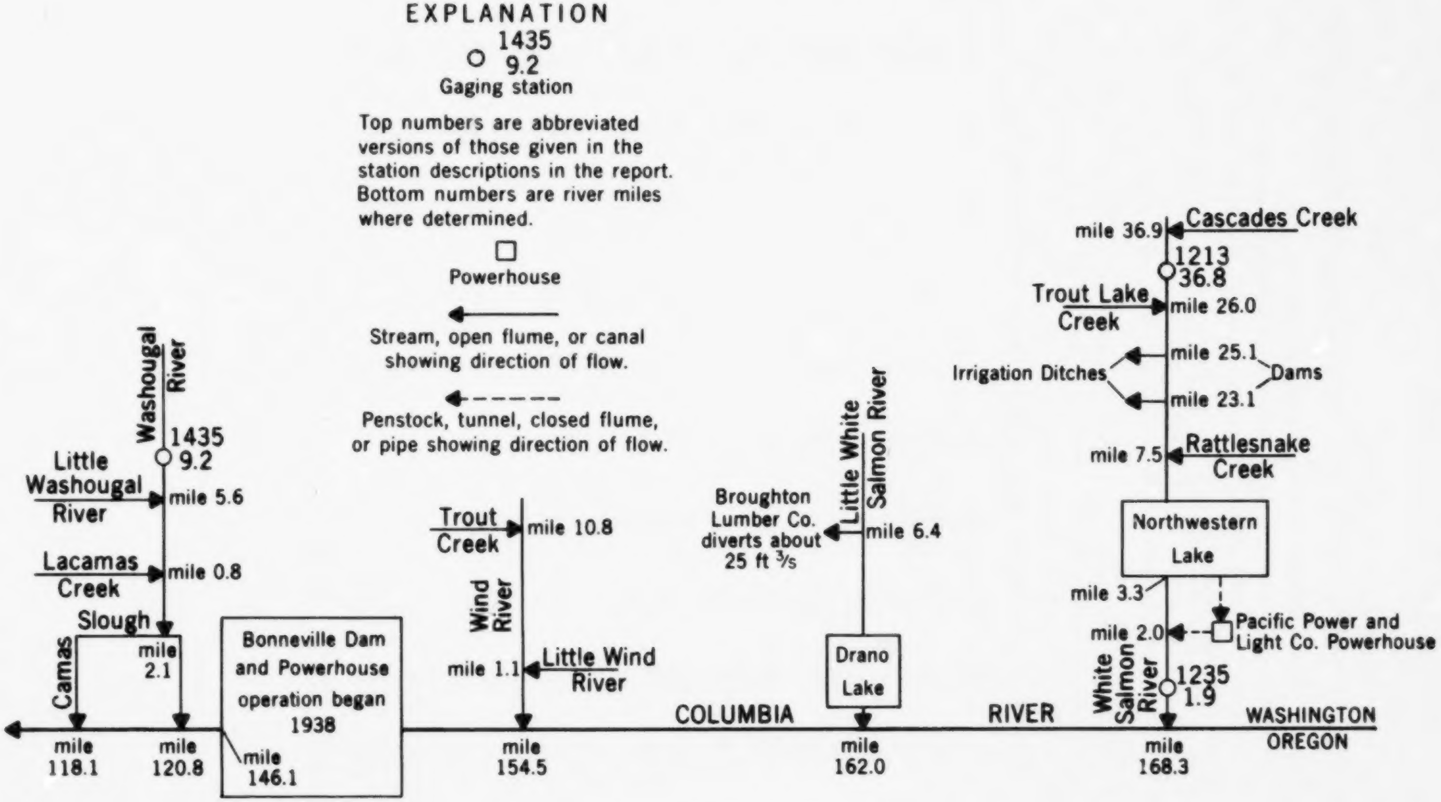
EXPLANATION
1435
9.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Washougal River
1435
9.2
Little Washougal River
mile 5.6
Lacamas Creek
mile 0.8
Slough
Camas
mile 2.1
mile 118.1
mile 120.8
Bonneville Dam and Powerhouse operation began 1938
mile 146.1
Trout Creek
mile 10.8
Wind River
mile 1.1
Little Wind River
mile 154.5
COLUMBIA
Broughton Lumber Co. diverts about 25 ft³/s
Little White Salmon River
mile 6.4
Drano Lake
mile 162.0
RIVER
mile 36.9
Cascades Creek
1213
36.8
Trout Lake Creek
mile 26.0
mile 25.1
Irrigation Ditches
Dams
mile 23.1
mile 7.5
Rattlesnake Creek
Northwestern Lake
mile 3.3
mile 2.0
Pacific Power and Light Co. Powerhouse
White Salmon River
1235
1.9
mile 168.3
WASHINGTON
OREGON

Figure 19. Gaging stations in lower Columbia River basin between White Salmon and Washougal Rivers.

14121300 WHITE SALMON RIVER BELOW CASCADE CREEK, NEAR TROUT LAKE, WA

LOCATION.--Lat 46°06'14", long 121°36'27", in SW¼SW¼ sec.7, T.7 N., R.10 E., Skamania County, Hydrologic Unit 17070105, Gifford Pinchot National Forest, on right bank 100 ft (30 m) downstream from Cascade Creek, 7.9 mi (12.7 km) northwest of Trout Lake, and at mile 36.8 (59.2 km).

DRAINAGE AREA.--32.4 mi^2 (83.9 km^2).

PERIOD OF RECORD.--July 1957 to September 1978 (discontinued).

REVISED RECORDS.--WSP 1638: Drainage area. WRD Wash. 1971: 1958-61(P), 1963(P), 1965(P), 1966(M), 1967-69(P), 1970(M).

GAGE.--Water-stage recorder. Altitude of gage is 3,080 ft (939 m), from topographic map.

REMARKS.--Records fair. Probably some small diversions above station for irrigation. No regulation.

AVERAGE DISCHARGE.--21 years, 152 ft^3/s (4.305 m^3/s), 63.71 in/yr (1,620 mm/yr), 110,100 acre-ft/yr (136 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,510 ft^3/s (42.8 m^3/s) Dec. 2, 1977, gage height, 4.62 ft (1.408 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s); minimum, 48 ft^3/s (1.36 m^3/s) Mar. 24, 1964, gage height, 1.15 ft (0.351 m), probably result of pondage upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 360 ft^3/s (10.2 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Dec. 2	1400	*1,510	42.8	*4.62	1.408	Dec. 13	1900	1,140	32.3	4.11	1.253

Minimum daily discharge, 60 ft^3/s (1.70 m^3/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	220	308	80	82	84	194	159	144	163	139	108
2	79	180	1030	70	85	80	178	164	150	158	143	108
3	74	150	729	80	94	78	167	154	160	152	147	112
4	71	130	475	90	96	76	162	149	174	148	155	104
5	72	120	360	100	122	77	153	138	189	146	149	106
6	81	110	442	100	131	80	141	133	184	153	142	106
7	81	100	334	100	164	106	139	133	181	147	146	96
8	77	96	274	110	149	108	134	144	178	146	150	102
9	73	96	243	123	143	95	137	155	181	144	149	181
10	70	100	301	110	115	91	151	152	166	139	138	145
11	68	95	402	103	107	89	149	161	162	137	131	112
12	70	100	387	105	103	85	138	149	157	134	127	104
13	76	140	768	104	99	84	133	222	155	135	122	100
14	72	130	744	106	94	82	129	271	148	140	121	97
15	70	140	574	114	90	80	132	210	144	161	164	97
16	72	120	416	106	86	82	136	195	144	183	139	92
17	73	105	336	104	82	89	131	183	143	157	123	95
18	74	100	286	102	86	96	153	180	145	147	120	92
19	75	90	249	100	90	101	147	188	147	142	123	89
20	76	75	224	100	90	111	136	197	147	140	121	90
21	78	60	205	114	91	123	128	195	150	139	117	91
22	78	65	189	103	91	137	125	179	150	144	117	96
23	80	70	176	95	94	170	126	162	146	145	116	105
24	80	90	165	93	99	169	134	155	147	142	147	97
25	85	150	154	92	94	208	152	149	148	143	126	92
26	85	300	144	88	92	193	174	146	142	167	112	93
27	80	250	136	86	89	190	180	150	145	164	108	97
28	88	230	125	86	87	200	176	152	149	141	105	90
29	110	250	120	86	---	210	168	139	157	139	106	88
30	120	222	110	81	---	223	161	134	159	139	108	88
31	130	---	100	83	---	210	---	137	---	140	110	---
TOTAL	2495	4084	10506	3014	2845	3807	4464	5135	4692	4575	4021	3073
MEAN	80.5	136	339	97.2	102	123	149	166	156	148	130	102
MAX	130	300	1030	123	164	223	194	271	189	183	164	181
MIN	68	60	100	70	82	76	125	133	142	134	105	88
AC-FT	4950	8100	20840	5980	5640	7550	8850	10190	9310	9070	7980	6100

CAL YR 1977 TOTAL 42454 MEAN 116 MAX 1030 MIN 60 AC-FT 84210
WTR YR 1978 TOTAL 52711 MEAN 144 MAX 1030 MIN 60 AC-FT 104600

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW¼NW¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft (91 m) downstream from bridge, 1,000 ft (305 m) downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi (2.7 km) north of Underwood, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--386 mi² (1,000 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1912 to February 1913 (published as "at Condit Dam, near Underwood") March 1915 to September 1930, September 1935 to current year.

REVISED RECORDS.--WSP 484: 1915-17. WSP 1348: 1936-41(m). WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 112.96 ft (34.340 m) National Geodetic Vertical Datum of 1929. Prior to March 1913, reference point at dam 1 mi (1.6 km) upstream at different datum. March 1915, to July 16, 1918, water-stage recorder at site 200 ft (61 m) upstream at datum 3.24 ft (0.988 m) higher, and July 17, 1918, to Sept. 30, 1930, at datum 2.24 ft (0.683 m) higher than present datum.

REMARKS.--Water-discharge records good. Diversions for irrigation of about 4,500 acres (18 km²) in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co.

AVERAGE DISCHARGE.--58 years (water years 1916-30, 1936-78), 1,135 ft³/s (32.14 m³/s), 822,300 acre-ft/yr (1,014 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 15,300 ft³/s (433 m³/s) Jan. 15, 1974, gage height, 12.85 ft (3.917 m), from rating curve extended above 6,000 ft³/s (170 m³/s); practically no flow at times when powerplant is shut down; minimum daily, 158 ft³/s (4.47 m³/s) Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,980 ft³/s (283 m³/s) Dec. 14, gage height, 10.21 ft (3.112 m); minimum, 31 ft³/s (0.88 m³/s) Oct. 10, gage height, 0.95 ft (0.290 m); minimum daily, 386 ft³/s (10.9 m³/s) Oct. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	501	711	1570	1240	1360	1510	1730	1420	955	851	695	612
2	485	1260	4960	1220	1370	1440	1630	1410	1140	819	651	608
3	545	1040	5690	1270	1480	1420	1550	1400	1090	844	650	599
4	422	797	3370	1300	1580	1390	1490	1340	1100	810	650	596
5	463	747	2420	1340	1690	1340	1490	1290	1110	786	650	593
6	453	688	2390	1350	2010	1320	1430	1240	1090	817	643	597
7	455	661	2650	1340	2410	1330	1350	1220	1130	810	587	591
8	498	653	2090	1440	2760	1450	1330	1210	1080	789	610	575
9	530	620	1770	1520	2730	1430	1290	1240	1070	789	621	676
10	459	629	1750	1540	2370	1380	1310	1260	1130	788	662	686
11	460	704	2910	1500	2120	1370	1350	1230	1110	789	616	708
12	492	660	3410	1500	1940	1370	1340	1250	1060	760	587	645
13	452	663	7620	1520	1810	1330	1290	1370	1010	741	587	635
14	444	795	9080	1510	1700	1330	1280	1740	995	721	587	630
15	444	1120	6880	1590	1630	1280	1260	1780	976	687	599	616
16	441	1100	4640	1730	1530	1250	1360	1560	964	767	647	596
17	495	908	3420	1840	1490	1260	1300	1430	899	771	619	592
18	386	820	2850	1900	1450	1290	1300	1390	936	751	597	592
19	418	754	2390	1940	1440	1320	1370	1360	934	718	592	587
20	418	694	2070	1820	1430	1340	1370	1360	906	718	596	577
21	419	627	1910	1940	1410	1400	1350	1350	881	718	611	577
22	428	622	1690	1950	1400	1440	1320	1300	881	698	611	582
23	442	632	1700	1800	1390	1580	1350	1250	881	662	611	592
24	447	666	1600	1660	1520	1670	1320	1180	858	679	643	587
25	456	1370	1520	1620	1590	1770	1370	1140	855	691	708	577
26	456	2880	1470	1580	1620	1860	1460	1130	850	678	650	572
27	464	2220	1430	1490	1600	1840	1510	1120	809	670	583	550
28	457	1810	1390	1450	1550	1800	1540	1130	830	670	607	550
29	477	2120	1400	1430	---	1810	1480	1140	835	670	601	545
30	710	1910	1340	1360	---	1810	1450	1090	849	650	601	541
31	744	---	1340	1360	---	1820	---	1060	---	656	600	---
TOTAL	14721	30881	90720	48050	48380	45950	41970	40390	29214	22968	19272	17984
MEAN	475	1029	2926	1550	1728	1482	1399	1303	974	741	622	599
MAX	744	2880	9080	1950	2760	1860	1730	1780	1140	851	708	708
MIN	386	620	1340	1220	1360	1250	1260	1060	809	650	583	541
AC-FT	29200	61250	179900	95310	95960	91140	83250	80110	57950	45560	38230	35670

CAL YR 1977 TOTAL 284961 MEAN 781 MAX 9080 MIN 361 AC-FT 565200
WTR YR 1978 TOTAL 450500 MEAN 1234 MAX 9080 MIN 386 AC-FT 893600

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-70, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1968 to August 1970.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1977 13...	1515	452	60	7.8	8.0	0	0	--	7	28	0
NOV 16...	1030	1120	54	7.2	6.2	20	3	--	110	27	6
DEC 15...	1040	6960	35	7.4	6.4	40	35	12.4	66	14	1
JAN , 1978 19...	1035	1960	54	7.1	5.5	10	5	--	200	31	4
FEB 15...	1730	1620	52	7.2	4.8	5	1	12.7	8	31	31
MAR 14...	1030	1330	52	7.1	7.6	5	0	11.6	47	22	0
APR 13...	1015	1280	51	7.1	7.4	5	0	11.5	27	19	0
MAY 03...	1030	1400	47	6.4	8.4	5	1	11.0	43	19	0
JUN 06...	1245	1100	50	7.4	11.2	5	0	10.3	50	24	0
JUL 06...	1020	843	60	7.3	10.6	0	0	10.6	5	23	0
AUG 02...	1245	650	59	7.6	10.8	5	0	9.5	7	24	0
SEP 07...	0930	592	65	7.5	9.2	0	3	10.7	9	24	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1977 13...	6.7	2.7	3.7	21	.3	1.4	36	0	30	.9
NOV 16...	7.6	2.0	3.2	20	.3	1.0	26	0	21	2.6
DEC 15...	3.4	1.4	2.2	24	.3	1.0	16	0	13	1.0
JAN , 1978 19...	8.5	2.3	3.4	19	.3	1.2	32	0	26	4.1
FEB 15...	8.4	2.4	3.2	18	.3	1.1	81	0	66	8.2
MAR 14...	5.0	2.4	3.3	23	.3	1.1	32	0	26	4.1
APR 13...	4.5	2.0	2.8	23	.3	1.1	28	0	23	3.6
MAY 03...	4.8	1.6	3.5	28	.4	1.0	30	0	25	19
JUN 06...	4.8	2.8	3.1	21	.3	1.1	29	0	24	1.8
JUL 06...	4.8	2.7	3.6	24	.3	1.4	33	0	27	2.6
AUG 02...	5.2	2.7	3.5	23	.3	1.4	36	0	30	1.4
SEP 07...	5.0	2.7	5.4	32	.5	1.4	35	0	29	1.8

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA--Continued

WATER QUALITY DATA

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1977										
13...	9.2	.8	.16	.28	.52	.80	.96	4.2	.03	.03
NOV										
16...	3.7	1.1	.06	.03	.13	.16	.22	1.0	.05	.02
DEC										
15...	2.2	1.1	.10	.05	--	--	--	--	.20	.02
JAN , 1978										
19...	5.5	1.5	.19	.03	--	--	--	--	.05	.02
FEB										
15...	5.2	2.4	.14	.04	--	--	--	--	.02	.02
MAR										
14...	1.9	2.0	.11	.02	--	--	--	--	.03	.02
APR										
13...	1.9	2.8	.05	.02	--	--	--	--	.03	.02
MAY										
03...	2.8	1.0	.03	.02	--	--	--	--	.03	.01
JUN										
06...	4.5	1.7	.17	.03	--	--	--	--	.03	.02
JUL										
06...	3.2	2.2	.30	.03	--	--	--	--	.04	.03
AUG										
02...	2.5	.9	.12	.01	--	--	--	--	.03	.03
SEP										
07...	5.6	1.3	.10	.02	--	--	--	--	.03	.03

DATE	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	ARSENIC DISSOLVED (UG/L AS AS)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1977										
13...	.09	0	2	0	2	22	.0	0	0	10
NOV										
16...	.06	0	0	4	0	4	.0	0	0	10
DEC										
15...	.06	0	1	0	0	12	.0	0	0	0
JAN , 1978										
19...	.06	0	1	0	2	5	.2	0	0	20
FEB										
15...	.06	1	0	10	2	6	.3	0	0	10
MAR										
14...	.06	0	1	0	1	5	.0	0	0	0
APR										
13...	.06	3	0	10	0	10	.0	0	0	0
MAY										
03...	.03	0	0	0	5	5	.0	0	0	0
JUN										
06...	.06	0	2	0	1	5	.0	0	0	0
JUL										
06...	.09	0	2	0	2	8	.0	0	0	10
AUG										
02...	.09	0	1	10	1	4	.0	0	0	<3
SEP										
07...	.09	0	0	0	1	3	.0	0	0	10

14128500 WIND RIVER NEAR CARSON, WA

LOCATION.--Samples taken at footbridge 200 ft (61 m) downstream from Little Wind River, 0.8 mi (1.3 km) downstream from gaging station and 1.2 mi (1.9 km) east of Carson.

PERIOD OF RECORD.--Water years 1973, 1976 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
13...	1200	319	49	7.6	9.6	0	0
NOV							
16...	1300	3060	35	7.4	7.5	5	5
DEC							
15...	1530	10000	29	7.3	6.2	40	80
JAN , 1978							
19...	1515	2200	71	7.1	5.6	5	2
FEB							
15...	1500	1340	35	7.4	5.6	5	1
MAR							
14...	1330	986	38	7.4	6.3	5	0
APR							
13...	1330	790	39	7.4	8.0	5	0
MAY							
03...	1320	962	34	7.2	8.4	5	1
JUN							
06...	1430	580	43	7.3	13.4	5	0
JUL							
06...	1315	488	48	7.2	14.4	0	0
AUG							
02...	1530	225	56	8.2	16.2	5	0
SEP							
07...	1200	202	59	7.2	11.6	0	2

DATE	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977							
13...	--	1	.01	.01	.02	.01	.03
NOV							
16...	--	3	.06	.05	.04	.01	.03
DEC							
15...	13.0	3	.03	.04	.17	.02	.06
JAN , 1978							
19...	--	1	.12	.05	.03	.02	.06
FEB							
15...	13.5	1	.48	.04	.02	.01	.03
MAR							
14...	13.0	<1	.00	.02	.02	.01	.03
APR							
13...	11.5	<1	.00	.04	.01	.01	.03
MAY							
03...	12.4	4	.00	.01	.03	.01	.03
JUN							
06...	10.9	<1	.02	.02	.02	.01	.03
JUL							
06...	10.7	1	.01	.00	.03	.02	.06
AUG							
02...	10.5	1	.01	.01	.03	.02	.06
SEP							
07...	11.3	2	.00	.01	.02	.02	.06

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NW¼SE¼ sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank, 0.1 mi (0.2 km) downstream from Tumalt Creek, 1.0 mi (1.6 km) west of Warrendale, 5.1 mi (8.2 km) downstream from Bonneville Dam, and at mile 141.0 (226.9 km).

DRAINAGE AREA.--240,400 mi² (622,600 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: August 1967 to April 1973, October 1975 to current year.

INSTRUMENTATION: Water-quality monitor since October 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum 242 micromhos May 15, 1977; minimum, 92 micromhos June 27, 1978.
WATER TEMPERATURES: Maximum, 22.5°C Aug. 11-13, 1971, Aug. 17, 18, 1977; minimum, 1.0°C Feb. 3-11, 1972.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 212 micromhos Feb. 1; minimum, 92 micromhos June 27.
WATER TEMPERATURES: Maximum, 22.0 °C Aug.8, 9, 10, 11; minimum recorded, 2.0°C Jan. 3, 5.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1977												
06...	1200	132000	158	7.7	16.2	3	--	9.6	K1	28	64	3
NOV												
08...	1030	125000	185	7.9	12.0	4	--	9.9	K3	K14	74	5
28...	1100	132000	151	7.4	7.8	9	--	11.3	K5	47	63	10
JAN , 1978												
25...	1000	181000	183	7.7	4.2	10	--	13.0	K3	140	69	4
FEB												
13...	1200	162000	176	7.6	4.1	8	--	12.8	K2	K7	77	10
MAR												
20...	1250	179000	179	7.7	6.3	4	--	11.7	35	K8	77	8
APR												
21...	1100	248000	159	7.7	9.4	4	--	11.3	K1	K12	73	11
MAY												
19...	1030	306000	144	7.7	12.7	--	5.2	12.7	K2	K3	59	2
JUN												
09...	1000	287000	124	7.8	16.0	--	4.0	11.1	K4	90	55	7
JUL												
11...	1300	223000	115	8.3	17.6	--	4.4	10.1	--	K6	46	17
AUG												
25...	1300	123000	130	8.0	19.5	--	4.3	9.2	K12	21	57	1

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT , 1977												
06...	18	4.7	5.4	15	.3	1.1	75	--	62	2.4	12	2.7
NOV												
08...	20	5.9	9.0	20	.5	1.6	84	0	69	1.7	13	4.6
28...	17	5.1	6.7	18	.4	1.3	65	0	53	4.1	13	3.4
JAN , 1978												
25...	18	5.8	7.2	18	.4	1.4	79	0	65	2.5	13	4.2
FEB												
13...	21	5.9	7.2	17	.4	1.5	81	0	66	3.3	15	4.2
MAR												
20...	21	6.0	6.2	15	.3	1.0	84	0	69	2.7	16	4.4
APR												
21...	21	5.0	5.7	14	.3	1.3	76	0	62	2.4	12	3.1
MAY												
19...	16	4.7	5.7	17	.3	1.3	--	--	57	--	9.7	2.9
JUN												
09...	15	4.2	4.5	15	.3	1.1	--	--	48	--	13	2.3
JUL												
11...	13	3.3	4.0	16	.3	1.1	--	--	29	--	10	2.0
AUG												
25...	16	4.1	7.1	21	.4	1.0	--	--	56	--	10	2.1

K Results based upon colony counts outside the ideal range.

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVEU (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)
OCT , 1977												
06...	.1	6.8	88	88	.12	31400	--	.06	.01	--	--	--
NOV												
08...	.2	8.8	107	105	.15	36100	--	.14	.04	--	--	--
28...	.2	9.4	87	88	.12	31000	12	.24	.00	--	--	--
JAN , 1978												
25...	.2	13	107	102	.15	52300	23	.29	.02	.24	.26	.00
FEB												
13...	.1	13	116	108	.16	50700	22	.34	.01	.03	.04	--
MAR												
20...	.2	13	108	109	.15	52200	5	.40	.01	.17	.18	.00
APR												
21...	.1	11	88	97	.12	58900	14	.20	.03	.39	.42	.00
MAY												
19...	.2	10	81	86	.11	66900	30	.03	.00	--	--	--
JUN												
09...	.1	8.2	78	77	.11	60400	24	.00	.01	.33	.34	.06
JUL												
11...	.1	7.2	64	58	.09	38500	53	.00	.00	.52	.52	--
AUG												
25...	.2	7.0	77	81	.10	25600	9	.02	.06	.32	.38	.03

DATE	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977											
06...	--	--	--	.03	.01	1.3	--	--	8	2850	86
NOV											
08...	.23	--	--	.04	.03	1.7	--	--	8	2700	91
28...	.67	--	--	.04	.02	1.5	--	--	22	7840	81
JAN , 1978											
25...	.27	.55	2.4	.02	.04	1.7	--	--	16	7820	98
FEB											
13...	--	.38	1.7	.06	.04	2.0	--	--	19	8310	87
MAR											
20...	.18	.58	2.6	.04	.03	1.5	--	--	10	4830	91
APR											
21...	.42	.62	2.7	.04	.00	--	1.8	.6	21	14100	86
MAY											
19...	.45	--	--	.06	.00	3.5	--	--	30	24800	88
JUN											
09...	.28	.34	1.5	.01	.01	3.0	--	--	26	28100	79
JUL											
11...	--	.52	2.3	.03	.00	--	1.7	.8	27	16300	93
AUG											
25...	.35	.40	1.8	.03	.03	2.1	--	--	11	3650	85

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUSPENDED TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)
NOV , 1977										
08...	1030	2	0	2	400	400	0	--	--	--
JAN , 1978										
25...	1000	2	1	1	0	0	0	1	0	1
APR										
21...	1100	1	0	2	300	0	300	--	--	--
JUL										
11...	1300	0	0	1	200	100	--	3	2	1

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
NOV , 1977										
08...	4	0	4	0	0	0	26	17	9	160
JAN , 1978										
25...	10	10	0	0	0	0	26	18	8	790
APR										
21...	10	10	0	0	0	0	140	130	13	1000
JUL										
11...	0	0	0	0	0	0	23	20	3	720

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA

DATE	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)
NOV , 1977										
08...	--	30	34	29	5	20	10	8	.0	.0
JAN , 1978										
25...	--	40	54	52	2	30	30	0	.0	.0
APR										
21...	--	20	--	--	--	20	10	10	.0	.0
JUL										
11...	640	80	19	14	5	30	30	0	.0	.0

DATE	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
NOV , 1977										
08...	.0	0	0	0	0	0	0	190	170	20
JAN , 1978										
25...	.0	0	0	0	1	1	0	50	30	20
APR										
21...	.0	0	0	0	0	0	0	70	50	20
JUL										
11...	.0	0	0	0	0	0	0	20	20	0

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	169	165	167	187	183	185	161	158	160	163	152	157
2	167	160	164	186	180	181	161	151	156	151	141	143
3	163	159	161	185	180	183	156	154	155	140	131	135
4	162	158	160	189	183	186	158	155	157	133	129	131
5	164	158	161	190	187	188	169	158	163	132	128	129
6	160	158	159	190	188	189	170	162	166	131	128	130
7	163	160	162	192	186	189	171	165	168	133	131	132
8	163	161	162	192	185	188	176	170	173	139	134	137
9	166	160	164	192	187	190	182	174	178	146	141	143
10	166	157	163	191	184	188	182	177	181	153	148	150
11	164	160	162	188	184	186	176	166	171	157	153	155
12	166	161	163	188	185	186	179	167	173	156	152	154
13	168	165	166	187	182	184	167	157	162	155	151	153
14	169	165	168	184	178	181	163	153	157	---	---	---
15	172	167	170	179	172	176	169	157	163	---	---	---
16	173	169	171	180	175	178	173	167	170	---	---	---
17	174	170	174	185	179	183	178	170	174	---	---	---
18	181	176	178	190	185	188	176	173	174	---	---	---
19	185	182	183	193	188	192	178	174	175	---	---	---
20	188	184	187	194	188	191	177	174	175	160	153	156
21	189	185	188	188	183	185	177	173	175	165	160	163
22	191	186	189	182	175	179	176	172	173	171	166	168
23	195	191	192	176	173	174	175	172	174	178	172	175
24	196	194	195	176	172	174	175	172	173	183	179	181
25	201	198	199	170	152	161	176	170	172	187	183	185
26	206	199	203	156	149	152	173	167	171	196	187	191
27	203	201	203	157	146	152	172	169	171	198	193	195
28	202	199	201	159	151	156	175	172	173	203	198	200
29	199	195	197	162	152	157	174	170	172	205	202	203
30	195	190	192	160	157	159	171	166	168	207	204	205
31	188	185	187	---	---	---	166	161	165	209	207	208
MONTH	206	157	177	194	146	179	182	151	169	209	128	163

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	212	208	210	186	178	183	---	---	---	159	156	158
2	211	207	209	185	179	183	---	---	---	159	155	157
3	207	204	205	185	183	184	---	---	---	159	155	157
4	203	198	200	185	181	184	---	---	---	159	154	158
5	197	191	194	184	180	182	---	---	---	159	152	156
6	190	188	189	182	178	180	---	---	---	159	151	156
7	186	182	184	180	177	178	---	---	---	158	152	156
8	181	180	180	176	170	175	---	---	---	158	152	156
9	180	173	178	176	170	174	---	---	---	159	155	157
10	180	172	178	177	169	175	---	---	---	158	156	157
11	179	176	178	178	176	177	---	---	---	157	154	156
12	180	176	178	180	177	179	---	---	---	157	152	155
13	177	175	176	182	178	180	---	---	---	155	151	153
14	177	175	176	184	176	181	---	---	---	151	148	149
15	177	174	175	184	176	181	---	---	---	148	144	146
16	177	172	175	184	174	180	---	---	---	147	144	146
17	178	175	176	182	174	179	---	---	---	147	143	145
18	181	178	179	182	173	178	---	---	---	147	139	145
19	184	177	180	181	174	178	---	---	---	149	141	145
20	186	183	184	182	174	179	---	---	---	149	142	146
21	187	181	184	186	176	182	---	---	---	149	146	147
22	189	185	187	186	184	185	---	---	---	151	146	149
23	192	186	189	187	184	186	---	---	---	153	148	150
24	193	191	192	187	186	185	---	---	---	157	150	153
25	193	191	192	---	---	---	---	---	---	157	152	155
26	191	183	188	---	---	---	---	---	---	155	152	153
27	189	185	187	---	---	---	157	156	157	152	147	150
28	187	183	185	---	---	---	159	155	157	148	144	146
29	---	---	---	---	---	---	160	154	158	145	139	142
30	---	---	---	---	---	---	161	157	159	143	134	139
31	---	---	---	---	---	---	---	---	---	140	132	136
MONTH	212	172	186	187	169	180	161	154	158	159	132	151

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	135	129	132	111	103	107	123	119	121			
2	132	123	128	111	107	109	124	121	123			
3	131	123	127	109	107	108	127	121	124			
4	128	120	125	110	107	109	130	122	127			
5	128	119	123	111	104	108	129	124	126			
6	127	120	124	112	108	110	131	125	128			
7	126	120	123	113	107	111	132	127	130			
8	125	119	122	113	109	111	133	128	130			
9	124	120	122	113	111	112	134	128	131			
10	122	118	120	115	110	113	135	129	132			
11	119	112	116	119	112	115	135	130	133			
12	118	114	117	115	107	112	141	134	137			
13	118	115	117	115	108	112	147	140	144			
14	118	114	117	116	108	113	155	147	151			
15	117	113	115	116	111	114	157	154	156			
16	116	112	114	116	111	114	155	144	152			
17	115	108	112	115	110	113	144	140	142			
18	113	108	110	116	108	112	144	141	143			
19	112	103	107	117	107	112	143	141	142			
20	106	101	104	116	104	109	149	143	147			
21	105	101	103	117	107	112	153	146	151			
22	103	97	101	117	110	114	146	144	145			
23	102	96	98	125	115	119	148	135	140			
24	101	98	99	125	115	119	139	130	136			
25	103	97	99	126	115	121	135	130	131			
26	99	94	97	124	120	123	---	---	---			
27	101	92	97	124	119	122	---	---	---			
28	102	94	99	122	119	121	---	---	---			
29	108	101	104	125	118	121	---	---	---			
30	110	101	105	128	124	126	---	---	---			
31	---	---	---	125	115	121	---	---	---			
MONTH	135	92	113	128	103	114	157	119	137			
YEAR	212	92	156									

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO JULY 1978

DATE	NOV 28,77	MAR 20,78	MAY 19,78	JUN 9,78	JUL 11,78
TIME	1100	1250	1030	1000	1300
TOTAL CELLS/ML	1900	8900	43000	18000	6800
DIVERSITY: DIVISION	0.4	0.3	0.1	0.1	0.2
.CLASS	0.4	0.3	0.1	0.1	0.2
..ORDER	1.3	1.3	0.8	0.8	0.6
...FAMILY	1.8	1.4	0.9	1.1	0.7
....GENUS	2.5	1.9	1.1	1.4	0.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCUCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	18	1	380	4	*	0	160	1	*	0
....OOCYSTIS	24	1	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	110	6	--	-	--	-	--	-	110	2
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	130	7	3100#	35	870	2	700	4	43	1
....MELOSIRA	730#	39	1800#	20	33000#	77	13000#	74	6000#	88
....STEPHANODISCUS	91	5	--	-	--	-	--	-	72	1
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	24	1	48	1	*	0	--	-	--	-
....COCCONEIS	24	1	96	1	*	0	--	-	--	-
....RHOICOSPHENIA	12	1	--	-	*	0	*	0	--	-
...CYMBELLACEAE										
....AMPHORA	*	0	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	260	1	--	-	*	0
...DIATOMACEAE										
....DIATOMA	--	-	--	-	--	-	120	1	*	0
...FRAGILARIACEAE										
....ASTERIONELLA	600#	32	3300#	37	7000#	16	2600	14	200	3
....FRAGILARIA	43	2	--	-	*	0	*	0	240	4
....HANNAEA	--	-	--	-	--	-	*	0	--	-
....SYNEDRA	--	-	48	1	610	1	*	0	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	*	0	*	0
...NAVICULACEAE										
....NAVICULA	24	1	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	36	2	--	-	--	-	120	1	--	-
...TABELLARIACEAE										
....TABELLARIA	--	-	--	-	--	-	740	4	43	1
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	96	1	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	--	-	--	-	520	1	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	*	0	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE.--Additional phytoplankton data available from District office in Tacoma.

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
MAY , 1978						
19...	1030	.079	.394	.090	.000	28
AUG						
25...	1300	--	--	6.98	.000	45

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.0	16.0	14.0	13.5	8.5	8.0	4.5	3.5	4.5	4.5	5.5	5.5
2	16.0	16.0	13.5	13.5	8.5	8.5	3.0	2.5	4.5	4.5	5.5	5.5
3	16.0	15.5	13.5	13.0	8.5	8.5	2.5	2.0	4.5	4.5	5.5	5.5
4	15.5	15.0	13.0	13.0	8.5	8.0	2.5	2.5	5.0	4.5	5.5	5.0
5	15.5	15.0	13.0	13.0	8.0	8.0	2.5	2.0	4.5	4.5	5.5	5.5
6	16.0	15.0	13.0	13.0	8.0	7.5	2.5	2.5	5.0	4.5	6.0	5.5
7	15.5	15.0	13.0	12.5	8.0	7.5	3.0	3.0	5.0	4.5	6.0	6.0
8	15.5	15.0	13.0	12.0	7.5	7.5	3.0	3.0	5.0	4.5	6.0	5.5
9	15.0	15.0	12.5	12.0	7.5	7.5	3.5	3.5	5.0	4.5	6.5	6.0
10	15.0	14.5	12.5	12.0	7.5	7.5	3.5	3.0	5.0	4.5	6.5	5.5
11	14.5	14.0	12.5	12.0	7.5	7.5	3.5	3.5	4.5	4.5	6.5	6.0
12	14.5	14.0	12.0	12.0	8.0	7.5	3.5	3.0	4.5	4.0	6.0	6.0
13	14.5	14.5	12.0	12.0	8.0	8.0	3.5	3.0	4.5	4.5	6.0	6.0
14	15.0	14.5	12.0	12.0	8.0	8.0	---	---	4.5	4.5	6.5	6.0
15	14.5	14.5	12.0	11.5	8.0	8.0	---	---	4.5	4.0	6.5	5.5
16	15.0	14.5	11.5	11.0	8.0	7.5	---	---	4.5	4.5	6.0	5.5
17	15.0	14.5	11.0	11.0	7.5	7.5	---	---	4.5	4.5	6.5	5.5
18	15.0	15.0	11.0	10.5	7.5	7.0	---	---	4.5	4.5	6.5	6.0
19	15.0	15.0	11.0	10.5	7.0	7.0	---	---	5.0	4.5	6.5	6.0
20	15.0	14.5	10.5	9.0	6.5	6.5	---	---	5.0	4.5	7.0	6.0
21	14.5	14.5	9.0	8.5	6.5	6.0	4.5	4.5	5.0	4.5	7.0	6.0
22	14.5	14.5	8.5	8.0	6.0	6.0	4.5	4.5	5.5	5.5	7.0	6.5
23	14.5	14.5	8.0	8.0	6.0	6.0	4.5	4.5	5.5	5.0	7.0	7.0
24	14.5	14.5	8.0	8.0	6.0	6.0	4.5	4.5	5.5	5.5	7.5	7.0
25	14.5	14.5	8.0	7.5	6.0	6.0	4.5	4.0	5.5	5.5	---	---
26	15.0	14.5	8.0	8.0	5.5	5.5	4.5	4.5	5.5	5.0	---	---
27	15.0	14.5	8.0	7.5	5.5	5.5	4.5	4.5	5.5	5.5	---	---
28	14.5	14.5	8.5	8.0	5.5	4.5	4.5	4.5	5.5	5.5	---	---
29	14.5	14.0	8.5	8.5	4.5	4.5	5.0	4.5	---	---	---	---
30	14.5	14.0	8.5	8.0	5.0	4.5	5.0	4.5	---	---	---	---
31	14.0	13.5	---	---	5.0	4.5	4.5	4.5	---	---	---	---
MONTH	16.0	13.5	14.0	7.5	8.5	4.5	5.0	2.0	5.5	4.0	7.5	5.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	10.5	10.0	14.5	14.0	17.0	17.0	20.5	20.0		
2	---	---	10.5	10.5	14.5	14.0	17.0	17.0	20.5	20.0		
3	---	---	10.5	10.5	15.0	14.5	17.0	17.0	21.0	20.5		
4	---	---	10.5	10.5	15.0	14.5	17.0	17.0	21.0	20.5		
5	---	---	11.0	10.5	15.5	15.0	17.0	17.0	21.0	20.5		
6	---	---	11.5	11.0	15.5	15.0	17.5	17.0	21.5	21.0		
7	---	---	11.5	11.5	15.5	15.5	18.5	17.5	21.5	21.0		
8	---	---	12.0	11.5	15.5	15.5	18.5	18.0	22.0	21.5		
9	---	---	12.0	12.0	15.5	15.5	18.5	18.0	22.0	22.0		
10	---	---	12.0	12.0	15.5	15.5	18.5	18.0	22.0	22.0		
11	---	---	12.0	12.0	16.0	15.5	18.0	17.5	22.0	21.5		
12	---	---	12.0	12.0	16.0	15.5	18.5	18.0	21.5	21.5		
13	---	---	12.0	12.0	16.0	16.0	19.0	18.5	21.5	21.0		
14	---	---	12.0	12.0	16.0	15.5	19.5	19.0	21.0	20.5		
15	---	---	12.0	12.0	15.5	15.5	19.5	19.0	20.5	20.5		
16	---	---	12.0	12.0	15.5	15.5	19.5	19.0	20.5	20.5		
17	---	---	12.5	12.0	16.0	15.5	19.0	18.5	20.5	20.0		
18	---	---	12.5	12.5	16.5	16.0	19.0	18.5	20.0	20.0		
19	---	---	13.0	12.5	16.5	16.0	19.5	18.5	20.0	20.0		
20	---	---	13.5	13.0	16.5	16.5	20.0	19.5	20.0	20.0		
21	---	---	13.5	13.0	16.5	16.5	20.0	20.0	20.0	20.0		
22	---	---	13.5	13.0	16.5	16.0	20.5	20.0	20.0	19.5		
23	---	---	13.0	13.0	16.5	16.0	20.5	20.5	19.5	19.5		
24	---	---	13.5	13.0	16.5	16.0	20.5	20.5	19.5	19.0		
25	---	---	13.5	13.5	16.0	16.0	20.5	20.5	19.5	19.0		
26	10.5	9.5	13.5	13.5	16.5	16.0	20.5	20.0	---	---		
27	10.0	10.0	13.5	13.5	17.0	16.5	20.0	20.0	---	---		
28	10.0	10.0	14.0	13.5	17.0	17.0	20.0	20.0	---	---		
29	10.0	10.0	14.0	13.5	17.0	17.0	20.0	20.0	---	---		
30	10.5	10.0	14.0	13.5	17.0	17.0	20.5	20.0	---	---		
31	---	---	14.0	14.0	---	---	20.5	20.0	---	---		
MONTH	10.5	9.5	14.0	10.0	17.0	14.0	20.5	17.0	22.0	19.0		

14143500 WASHOUGAL RIVER NEAR WASHOUGAL, WA

LOCATION.--Lat 45°37'23", long 122°17'35", in SW¼SE¼ sec.27, T.2 N., R.4 E., Clark County, Hydrologic Unit 17080001, on right bank 0.6 mi (1.0 km) upstream from Cougar Creek, 4.0 mi (6.4 km) northeast of Washougal, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--108 mi^2 (280 km^2).

PERIOD OF RECORD.--September 1944 to current year. Chemical analyses November 1961 to September 1970.

REVISED RECORDS.--WSP 1248: 1945-47, 1949-50, 1951(P). WSP 1738: 1948(M).

GAGE.--Water-stage recorder. Altitude of gage is 175 ft (53 m), from topographic map. Prior to Dec. 1, 1961. nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records excellent except those for period of no gage-height record Oct. 6 to Dec. 18, which are poor. Minor regulation by fish hatchery above station. Some small diversions for domestic use.

AVERAGE DISCHARGE.--34 years, 888 ft^3/s (25.15 m^3/s), 111.66 in/yr (2,836 mm/yr), 643,400 acre-ft/yr (793 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft^3/s (1,140 m^3/s) Dec. 2, 1977, gage height, 19.6 ft (5.97 m), from floodmarks, from rating curve extended above 22,000 ft^3/s (623 m^3/s); minimum observed, 41 ft^3/s (1.16 m^3/s) Sept. 10, 1958; minimum gage height, 1.35 ft (0.411 m) Sept. 27, 28, 1967.

According to a local resident, the flood of Dec. 2, 1977 exceeded all floods since 1888.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft^3/s (227 m^3/s) and maximum (*) from rating curve extended as explained above:

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft^3/s)	(m^3/s)	(ft)	(m)			(ft^3/s)	(m^3/s)	(ft)	(m)
Nov. 25	unknown	unknown	---	unknown		Dec. 13	1700	about 21,000	595	about 14.1	4.30
Dec. 2	1500	*40,400	1,140	*19.6	5.97						

Minimum discharge, 74 ft^3/s (2.096 m^3/s) Aug. 9, 10, 11, gage height, 1.92 ft (0.585 m).

REVISIONS.--The peak discharges and annual maximum (*) for some water years have been revised as shown in the following table. They supersede figures published in water-supply papers and reports indicated.

WSP	Water Year	Date	Discharge		Gage height	
			(ft^3/s)	(m^3/s)	(ft)	(m)
1935	1963	Nov. 20, 1962	*24,900	705	15.40	4.694
1935	1964	Jan. 25, 1964	*21,200	600	14.25	4.343
1935	1965	Nov. 24, 1964	19,800	561	13.75	4.191
		Dec. 1, 1964	13,000	368	11.30	3.444
		Dec. 22, 1964	*25,100	711	15.45	4.709
		Jan. 28, 1965	15,700	445	12.38	3.773
2135	1968	Feb. 19, 1968	*16,800	476	12.75	3.886
2135	1970	Jan. 18, 1970	*14,400	408	11.88	3.621
WRD Wash. 1971	1971	Dec. 30, 1970	*13,200	374	11.36	3.463
WRD Wash. 1972	1972	Jan. 20, 1972	*27,700	784	16.21	4.941
	1972	Feb. 27, 1972	16,800	476	12.77	3.892
WRD Wash. 1973	1973	Dec. 21, 1972	*13,700	388	11.58	3.530
WRD Wash. 1974	1974	Jan. 15, 1974	*15,800	447	12.42	3.786
WDR WA-75-1	1975	Jan. 13, 1975	*15,300	433	12.23	3.728
WDR WA-76-1	1976	Dec. 1, 1975	*19,900	564	13.79	4.203
		Dec. 4, 1975	15,600	442	12.36	3.767

14143500 WASHOUGAL RIVER NEAR WASHOUGAL, WA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	497	3200	2900	485	890	712	332	618	440	187	88	116
2	425	6400	26000	460	2240	612	416	552	398	184	90	107
3	365	2500	11000	485	2320	563	640	495	362	181	88	109
4	309	1200	5400	808	1680	520	640	480	332	178	86	111
5	278	1000	3200	1330	1380	465	932	450	312	172	84	126
6	280	820	3800	2000	1370	430	953	407	288	166	83	126
7	520	1000	3700	1310	1560	477	754	380	268	157	81	116
8	540	900	2500	1410	1940	724	629	358	256	152	77	116
9	430	820	1800	1630	1730	629	552	340	300	146	75	187
10	370	920	2400	1480	1360	552	510	332	376	144	74	574
11	330	860	6000	1200	1060	520	480	546	515	144	75	814
12	300	820	6200	1290	876	475	425	623	425	138	96	590
13	270	1200	13000	1300	742	492	389	1490	430	131	138	435
14	250	2500	9000	1070	670	465	407	3150	574	123	101	358
15	235	4900	5800	946	629	426	385	2400	724	128	187	300
16	220	3500	4100	932	557	408	596	1660	618	193	144	256
17	205	2500	2700	1140	530	385	848	1200	500	146	152	256
18	195	1700	2000	1410	510	376	1130	932	430	133	109	253
19	185	1100	1500	1400	515	376	1090	760	389	126	98	218
20	175	860	1240	1250	530	372	1050	652	340	116	114	197
21	170	720	1040	1650	525	358	1410	568	316	109	128	193
22	165	660	904	1840	505	344	2400	515	300	105	123	193
23	185	720	834	1340	475	397	2010	465	276	101	123	221
24	210	1500	1040	1040	490	475	1400	480	260	98	160	204
25	310	12000	995	890	640	724	1260	455	249	98	232	187
26	390	6000	876	814	1440	670	1170	435	239	96	172	178
27	330	3900	772	724	1110	530	1100	706	218	105	138	166
28	280	3200	694	682	862	460	981	911	207	98	121	157
29	800	3700	652	629	---	408	814	700	197	96	111	149
30	1700	2400	612	579	---	376	712	579	197	92	103	146
31	1500	---	552	646	---	344	---	500	---	90	111	---
TOTAL	12419	73500	123211	34170	29136	15065	26415	24139	10736	4133	3562	7159
MEAN	401	2450	3975	1102	1041	486	881	779	358	133	115	239
MAX	1700	12000	26000	2000	2320	724	2400	3150	724	193	232	814
MIN	165	660	552	460	475	344	332	332	197	90	74	107
CFSM	3.71	22.7	36.8	10.2	9.64	4.50	8.16	7.21	3.32	1.23	1.07	2.21
IN.	4.28	25.32	42.44	11.77	10.04	5.19	9.10	8.31	3.70	1.42	1.23	2.47
AC-FT	24630	145800	244400	67780	57790	29880	52390	47880	21290	8200	7070	14200

CAL YR 1977 TOTAL 357696 MEAN 980 MAX 26000 MIN 60 CFSM 9.07 IN 123.21 AC-FT 709500
WTR YR 1978 TOTAL 363645 MEAN 996 MAX 26000 MIN 74 CFSM 9.22 IN 125.25 AC-FT 721300

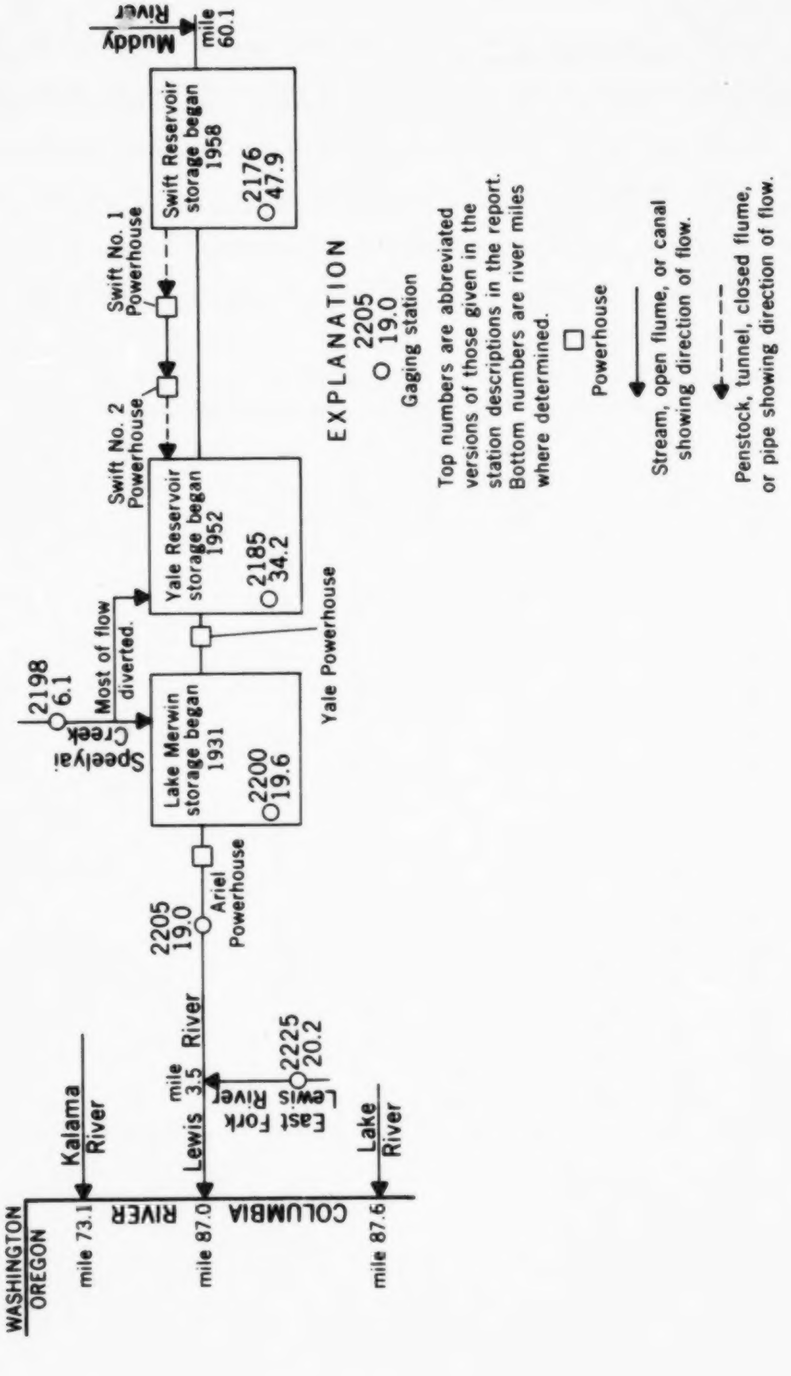
WASHINGTON
OREGON
mile 73.1
mile 87.0
mile 87.6
COLUMBIA RIVER
Kalama River
Lewis River
Lake River
mile 3.5
East Fork Lewis River
2225
20.2
2205
19.0
Ariel Powerhouse
Lake Merwin storage began 1931
2200
19.6
Speelyai Creek
2198
6.1
Most of flow diverted.
Yale Powerhouse
Yale Reservoir storage began 1952
2185
34.2
Swift No. 2 Powerhouse
Swift No. 1 Powerhouse
Swift Reservoir storage began 1958
2176
47.9
Muddy River
mile 60.1
EXPLANATION
2205
19.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 20. Gaging stations in Lewis River basin.

14219800 SPEELYAI CREEK NEAR COUGAR, WA

LOCATION.--Lat 46°00'28", long 122°20'46", in NW¼NW¼ sec.17, T.6 N., R.4 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 3.8 mi (6.1 km) southwest of Cougar and at mile 6.1 (9.8 km).

DRAINAGE AREA.--12.6 mi^2 (32.6 km^2).

PERIOD OF RECORD.--May 1959 to May 1978 (discontinued).

REVISED RECORDS.--WSP 1718: 1959.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m), from topographic map. Prior to Nov. 21, 1959, at site 250 ft (76 m) downstream at different datum.

REMARKS.--Records good except those above 400 ft^3/s (11.3 m^3/s) after December 2, which are poor. No regulation or diversion above station. Greater part of flow diverted into Yale Reservoir (see sta 14218500), 240 ft (73 m) downstream from station.

AVERAGE DISCHARGE.--18 (water years 1960-77), 108 ft^3/s (3.059 m^3/s), 116.40 in/yr (2,957 mm/yr), 78,250 acre-ft/yr (96.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,600 ft^3/s (102 m^3/s) probably Nov. 20, 1962 (by slope-area measurement, gage height not determined); minimum observed, 1.8 ft^3/s (0.051 m^3/s) Sept. 24-29, 1967, gage height, 0.24 ft (0.073 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges during period October 1977 to September 1978 above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)	Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)
Nov. 1	2000	1,230	34.8	4.98	1.518	Dec. 2	1300	*2,630	74.5	*6.73	2.051
Nov. 25	1500	1,570	44.5	5.40	1.646	Dec. 13	1600	1,360	38.5	5.00	1.524

Minimum discharge during period October 1977 to May 1978, 17 ft^3/s (0.48 m^3/s) Oct/ 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	697	398	54	70	68	49	66				
2	49	603	1920	50	197	60	63	56				
3	44	288	895	80	221	56	81	50				
4	39	176	518	195	188	51	96	45				
5	36	129	340	284	160	49	150	41				
6	38	112	550	310	152	47	147	37				
7	45	162	505	216	188	68	119	34				
8	39	129	340	236	227	95	100	31				
9	36	109	267	275	229	77	86	29				
10	33	159	340	231	183	65	80	29				
11	31	136	563	182	142	58	72	64				
12	29	119	617	183	111	52	63	62				
13	27	199	958	166	91	56	58	207				
14	26	450	725	150	81	51	63	331				
15	24	389	600	135	70	49	68	304				
16	23	286	460	122	61	46	88	215				
17	22	204	319	139	57	43	106	158				
18	21	154	214	174	57	41	167	116				
19	20	115	157	150	60	39	154	95				
20	19	90	122	139	62	37	150	82				
21	19	75	100	261	60	36	160	72				
22	18	66	85	235	56	35	255	62				
23	24	86	82	178	52	40	282	55				
24	30	146	100	136	51	65	221	50				
25	38	1020	102	110	71	166	190	46				
26	42	747	96	94	91	129	163	43				
27	36	480	87	81	84	90	134	85				
28	34	471	78	71	76	75	106	110				
29	97	536	71	64	---	63	89	89				
30	278	322	65	60	---	58	76	77				
31	199	---	59	65	---	51	---	70				
TOTAL	1471	8655	11733	4826	3148	1916	3636	2811				
MEAN	47.5	289	378	156	112	61.8	121	90.7				
MAX	278	1020	1920	310	229	166	282	331				
MIN	18	66	59	50	51	35	49	29				
CFSM	3.77	22.9	30.0	12.4	8.89	4.91	9.60	7.20				
IN.	4.34	25.55	34.64	14.25	9.29	5.66	10.73	8.30				
AC-FT	2920	17170	23270	9570	6240	3800	7210	5580				

CAL YR 1977 TOTAL 39128.6 MEAN 107 MAX 1920 MIN 2.8 CFSM 8.49 IN 115.51 AC-FT 77610

RESERVOIRS IN LEWIS RIVER BASIN, WA

14217600 SWIFT RESERVOIR.--Lat 46°03'38", long 122°11'44", in NE¼SW¼ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River 5.0 mi (8.0 km) east of Cougar and at mile 47.9 (77.1 km). DRAINAGE AREA, 481 mi^2 (1,246 km^2). PERIOD OF RECORD, September 1958 to current year. GAGE, water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific & Power Light Co.).

Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,550 acre-ft (551 hm^3) between elevations 878 ft (267.6 m), lower limit for economic operation, and 1,000.5 ft (304.95 m), maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft (936 hm^3) Nov. 15, 1973, elevation, 1,000.77 ft (305.035 m); minimum since reservoir was first filled, 325,100 acre-ft (401 hm^3) May 1, 1967, elevation, 883.60 ft (269.321 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 757,788 acre-ft (934 hm^3) Nov. 29, elevation, 1,000.48 ft (304.946 m); minimum, 444,408 acre-ft (548 hm^3) Mar. 15, elevation, 921.67 ft (280.925 m).

14218500 YALE RESERVOIR. Lat 45°57'50", long 122°19'53", in SE¼NE¼ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left end of Yale Dam on Lewis River just upstream from intake, 500 ft (152 m) upstream from powerhouse, 1.0 mi (1.6 km) upstream from Canyon Creek, 3.2 mi (5.1 km) southeast of Yale, and at mile 34.2 (55.0 km). DRAINAGE AREA, 596 mi^2 (1,544 km^2). PERIOD OF RECORD, August 1952 to current year. Chemical analyses February 1969 to June 1971, water temperature June 1969 to June 1971, and sediment records February 1970 to September 1971. GAGE, water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum.

Reservoir is formed by rock and earthfill dam; storage began July 31, 1952, dam completed in 1952. Usable capacity, 189,530 acre-ft (234 hm^3) between elevations 430 ft (131.1 m), lower limit for economic operation, and 490 ft (149.4 m), top of spillway gates. Dead storage below elevation 417 ft (127.1 m), 178,050 acre-ft (220 hm^3). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Water-stage recorder graph for period Mar. 10 to Aug. 8 and capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft (496 hm^3) May 13, 1961, elevation, 490.15 ft (149.398 m); minimum observed since reservoir was first filled, 227,600 acre-ft (281 hm^3) Feb. 22, 1957, elevation, 435.65 ft (132.786 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 400,460 acre-ft (494 hm^3) June 19, elevation, 489.65 ft (149.245 m); minimum, 303,987 acre-ft (375 hm^3) Jan. 31, elevation, 461.64 ft (140.708 m).

14220000 LAKE MERWIN.--Lat 45°57'23", long 122°33'13", in SW¼SW¼ sec.34, T.6 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left end of dam on Lewis River at Ariel and at mile 19.6 (31.5 km). DRAINAGE AREA, 730 mi^2 (1,890 km^2). PERIOD OF RECORD, March 1931 to current year. GAGE, water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity 246,000 acre-ft (303 hm^3) between elevations 165 ft (50.3 m), lower limit of regulation set by Federal Power Commission, and 235 ft (71.6 m) top of spillway gates. Additional storage of 18,200 acre-ft (22.4 hm^3) is provided by flashboards, elevation, 239.6 ft (73.03 m). Unused storage, below elevation 165 ft (50.3 m), 159,000 acre-ft (196 hm^3). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD: Maximum contents during the period 1931-52 not determined; maximum during period 1953-78, 424,000 acre-ft (523 hm^3) Jan. 24, 1959, elevation, 239.86 ft (73.109 m); minimum observed since reservoir was first filled, 164,200 acre-ft (202 hm^3) Dec. 5, 1936, elevation, 166.7 ft (50.81 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 421,926 acre-ft (520 hm^3) July 25, elevation, 239.38 ft (72.963 m); minimum, 371,403 acre-ft (458 hm^3) Feb. 18, elevation, 226.37 ft (68.998 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	14217600 SWIFT RESERVOIR			14218500 YALE RESERVOIR			14220000 LAKE MERWIN		
Sept. 30....	998.55	748,932	----	479.17	362,122	----	236.72	411,371	----
Oct. 31....	997.10	742,380	-6,552	466.90	320,678	-41,444	238.32	417,709	+6,338
Nov. 30....	999.79	754,614	+12,234	481.33	369,805	+49,127	232.98	396,719	-20,990
Dec. 31....	979.62	665,334	-89,280	482.02	372,282	+2,477	234.63	403,149	+6,430
CAL YR 1977	---	----	+205,049	---	----	+50,990	---	----	+25,478
Jan. 31....	963.99	600,790	-64,544	462.19	305,705	-66,577	230.29	386,346	-16,803
Feb. 28....	933.54	485,674	-115,116	471.68	336,371	+30,666	234.53	402,758	+16,412
Mar. 31....	944.88	526,986	+41,312	473.50	342,495	+6,124	236.30	409,712	+6,954
Apr. 30....	985.66	691,334	+164,348	487.48	392,315	+49,820	234.76	403,658	-6,054
May 31....	998.25	747,568	+56,234	487.09	390,857	-1,458	236.31	409,752	+6,094
June 30....	999.39	752,774	+5,206	488.22	395,085	+4,228	238.04	416,598	+6,846
July 31....	998.37	748,114	-4,660	487.63	392,876	-2,209	239.02	420,494	+3,896
Aug. 31....	996.25	738,555	-9,559	486.00	386,820	-6,056	235.00	404,598	-15,896
Sept. 30....	991.85	718,755	-19,800	469.08	327,763	-59,057	232.84	396,176	-8,422
WTR YR 1978	---	----	-30,177	---	----	-34,359	---	----	-15,195

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA

LOCATION.--Lat 45°57'21", long 122°33'20", in SE¼SE¼ sec.33, T.6 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, at bridge 500 ft (152 m) below Merwin Dam and 2,500 ft (760 m) upstream from gaging station (14220500).

PERIOD OF RECORD.--Water years 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT , 1977												
05...	0855	930	48	6.3	13.9	15	2	9.5	14	0	4.0	.9
NOV												
15...	0835	9410	40	6.4	11.1	5	2	10.5	20	5	6.4	.9
DEC												
06...	0830	17600	41	7.3	8.5	35	17	12.9	14	1	4.0	.9
JAN , 1978												
04...	0930	9100	40	7.3	5.7	15	11	12.9	15	0	4.8	.7
FEB												
15...	0930	8680	37	7.5	5.4	15	6	13.2	12	0	3.5	.8
MAR												
14...	0800	1610	43	6.7	5.5	10	6	13.1	14	0	4.3	.9
APR												
18...	0910	1450	84	7.0	5.5	15	5	12.2	14	0	4.3	.8
MAY												
09...	0920	3050	43	6.8	7.6	--	2	11.4	12	0	3.0	1.2
JUN												
13...	1130	3190	40	7.1	10.0	--	1	10.9	13	0	4.1	.7
JUL												
25...	0845	2910	38	7.1	10.9	10	2	9.6	13	0	3.6	.9
AUG												
15...	0900	840	38	6.5	11.4	5	1	10.4	13	0	3.7	.9
SEP												
06...	0800	1570	45	6.5	12.6	0	1	8.9	13	0	3.7	.9

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)
OCT , 1977												
05...	2.9	31	.3	.5	22	0	18	18	1.0	.8	.03	.04
NOV												
15...	2.8	23	.3	.5	18	0	15	11	1.6	1.8	.06	.04
DEC												
06...	2.5	28	.3	.4	16	0	13	1.3	2.2	1.5	.11	.05
JAN , 1978												
04...	2.7	28	.3	.4	19	0	16	1.5	3.4	1.7	.13	.06
FEB												
15...	1.9	25	.2	.3	16	0	13	.8	3.1	1.6	.06	.03
MAR												
14...	2.0	23	.2	.4	18	0	15	5.7	2.2	1.3	.05	.12
APR												
18...	2.4	26	.3	.4	18	0	15	2.9	1.9	1.3	.06	.04
MAY												
09...	2.5	30	.3	.4	17	0	14	4.3	2.1	1.8	.05	.07
JUN												
13...	2.1	25	.3	.3	17	0	14	2.2	3.8	1.6	.02	.04
JUL												
25...	2.5	29	.3	.4	19	0	16	2.4	1.8	1.3	.02	.06
AUG												
15...	2.3	27	.3	.4	19	0	16	9.6	1.5	1.3	.04	.02
SEP												
06...	2.4	28	.3	.4	19	0	16	9.6	3.0	1.3	.04	.01

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA--Continued

WATER QUALITY DATA

DATE	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	ARSENIC DIS-SOLVED (UG/L AS AS)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1977												
05...	.01	.00	.00	1	0	8	1	5	.0	0	0	10
NOV												
15...	.02	.00	.00	1	0	0	1	8	.0	0	0	10
DEC												
06...	.10	.00	.00	0	0	0	1	5	.0	0	0	10
JAN , 1978												
04...	.03	.01	.03	0	0	0	0	4	.0	0	0	0
FEB												
15...	.02	.01	.03	0	1	0	1	4	.0	0	0	0
MAR												
14...	.03	.00	.00	1	0	0	3	5	.0	0	0	0
APR												
18...	.02	.00	.00	1	0	0	0	1	.0	0	0	0
MAY												
09...	.01	.00	.00	1	1	10	3	3	.0	0	0	0
JUN												
13...	.01	.00	.00	1	0	0	2	4	.2	0	0	0
JUL												
25...	--	.00	.00	0	<1	0	1	11	.0	0	0	<3
AUG												
15...	.01	.01	.03	7	0	0	0	3	.0	0	0	0
SEP												
06...	.01	.00	.00	0	<1	0	2	0	.0	0	0	<3

14220500 LEWIS RIVER AT ARIEL, WA

LOCATION.--Lat 45°57'07", long 122°33'46", in NW¼NE¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi (0.6 km) southeast of Ariel, 0.5 mi (0.8 km) downstream from Ariel Dam and powerplant, 3.3 mi (5.3 km) upstream from Cedar Creek, and at mile 19.0 (30.6 km).

DRAINAGE AREA.--731 mi^2 (1,893 km^2).

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi (0.8 km) downstream; low discharges not equivalent due to local inflow. Chemical analyses July 1959 to June 1960, water temperature October 1950 to September 1963.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft (13.41 m) National Geodetic Vertical Datum of 1929 (levels by Pacific Power and Light Co.) July to November 1909, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. July 27 to Oct. 28, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi (0.8 km) downstream at datums 3.90 ft (1.189 m) and 0.90 ft (0.274 m) higher, respectively, than present datum.

REMARKS.--Records excellent. No diversion above station. Flow regulated by Swift and Yale Reservoirs and Lake Merwin (see stations 14217600, 14218500, 14220000).

AVERAGE DISCHARGE.--55 years (water years 1924-78), 4,885 ft^3/s (138 m^3/s), 90.75 in/yr (2,305 mm/yr) 3,539,000 acre-ft/yr (4,360 hm^3/yr), adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft^3/s (3,650 m^3/s) Dec. 22, 1933, gage height, 35.0 ft (10.67 m), from floodmarks, from rating curve extended above 56,000 ft^3/s (1,590 m^3/s) on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily, 1 ft^3/s (0.028 m^3/s) July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 71,900 ft^3/s (2,040 m^3/s) Dec. 2, gage height, 24.38 ft (7.431 m); minimum, 736 ft^3/s (20.8 m^3/s) Aug. 3, 4, gage height, 0.82 ft (0.250 m); minimum daily discharge, 808 ft^3/s (22.9 m^3/s) Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2950	6810	16200	8930	9080	8060	1590	4370	2690	1480	840	928
2	3070	9840	52100	9210	8660	6050	1550	5190	2510	1480	856	896
3	3420	10700	48000	9150	8760	5920	1560	5190	2520	1500	848	1120
4	869	10700	33400	9130	8040	5890	1590	5240	2510	1480	808	3070
5	898	8970	22000	9150	8720	5900	1570	4820	2510	1470	832	2240
6	1550	4480	17800	8800	8520	8100	1520	3230	2520	1450	832	1600
7	2810	8850	19100	8780	7460	7940	1510	3510	2490	1630	1080	1580
8	1070	7810	14800	8760	7760	5990	1480	3300	2480	2200	856	1540
9	899	6340	11700	8740	7780	5990	1500	2880	2680	1850	840	1540
10	892	4830	12000	9210	8060	4530	1480	2730	3050	1690	840	1540
11	1170	7110	19800	9520	7560	2680	1490	2730	3260	1650	848	2550
12	1130	8600	26200	9500	7480	2760	1500	2700	3190	1340	840	2160
13	1590	9220	41900	9480	7350	2210	1480	2730	3220	1100	840	2870
14	1150	9400	48400	9460	7400	1600	1480	3540	3770	1000	832	5270
15	888	10500	35300	9570	7440	1590	1470	5270	5060	1010	1800	5290
16	880	10900	23400	9630	7220	1740	1480	5270	4450	1640	1950	4060
17	1340	10100	16300	9210	7680	1610	1470	5270	3830	3440	2140	3770
18	1530	10300	11700	8720	7500	1610	1470	5290	2860	2150	2630	4230
19	1780	9850	11600	8760	6300	1610	1490	5310	2810	1860	864	2610
20	2640	4380	10300	8780	7200	1620	1490	5920	2720	1360	856	6080
21	3940	1070	9430	7320	7440	1610	1470	7360	2640	1300	2120	6100
22	6050	4380	8520	9280	5900	1610	1450	5830	2640	856	2090	6160
23	4680	8670	5600	9260	5870	1600	1450	2910	2540	864	2160	6140
24	6170	8950	3190	9430	2970	1600	1690	2910	2280	1420	2230	6140
25	6110	15200	8380	9460	2750	1620	2910	2910	2280	3350	2040	6100
26	3770	29800	8860	9480	2900	1590	2900	2930	2160	3020	2100	3090
27	5260	18000	8860	9540	4680	1600	2860	2930	1830	1190	2130	3150
28	4860	13100	8880	9720	7760	1600	2840	2910	1480	896	3890	1940
29	6330	14800	8910	9720	---	1590	2930	2900	1470	848	4680	952
30	6530	17200	8990	9480	---	1590	2950	2900	1460	848	4400	944
31	7140	---	8970	8800	---	1600	---	2880	---	848	2510	---
TOTAL	93366	300860	580590	283980	196260	101010	53620	123860	81910	48220	52582	95660
MEAN	3012	10030	18730	9161	7009	3258	1787	3995	2730	1555	1696	3189
MAX	7140	29800	52100	9720	9080	8100	2950	7360	5060	3440	4680	6160
MIN	869	1070	3190	7320	2750	1590	1450	2700	1460	848	808	896
AC-FT	185200	596800	1152000	563300	389300	200400	106400	245700	162500	95640	104300	189700
†	-41,658	+40,371	-80,373	-147,924	-68,038	+54,390	+208,114	+60,870	+16,280	-2,973	-31,511	-87,279
MEAN‡	2,333	10,710	17,430	6,754	5,787	4,143	5,287	4,985	3,006	1,507	1,184	1,721
CFSM‡	3.19	14.7	23.8	9.24	7.92	5.67	7.23	6.82	4.11	2.06	1.62	2.35
IN.‡	3.68	16.34	27.50	10.66	8.24	6.54	8.07	7.86	4.59	2.38	1.87	2.63
AC-FT‡	143,500	637,200	1,072M	415,400	321,300	254,800	314,500	306,600	178,800	92,670	72,790	102,400

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CAL YR 1977:  TOTAL  1,608,909   MEAN   4,408   MAX  52,100   MIN  745   AC-FT  3,191,000
    DO.....:  MEAN‡      4,797   CFSM‡  6.56    IN.‡  89.08   AC-FT‡   3,473,000
WTR YR 1978:  TOTAL  2,011,918   MEAN   5,512   MAX  52,100   MIN  808   AC-FT  3,991,000
    DO.....:  MEAN‡      5,402   CFSM‡  7.39    IN.‡ 100.32   AC-FT‡   3,911,000
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† Change in contents, Lake Merwin, and Swift and Yale Reservoirs.
‡ Adjusted for change in contents.
M Thousands.

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°50'13", long 122°27'54", in NE¼NW¼ sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft (18 m) downstream from Basket Creek, 1.5 mi (2.4 km) northeast of Heisson, 3.4 mi (5.5 km) southwest of Yacolt, and at mile 20.2 (32.5 km).

DRAINAGE AREA.--125 mi² (325 km²).

PERIOD OF RECORD.--September 1929 to current year. Water temperatures June 1950 to August 1972.

GAGE.--Water-stage recorder. Datum of gage is 366.8 ft (111.80 m) National Geodetic Vertical Datum of 1929 (from river-profile survey).

REMARKS.--Records excellent except those for period May 20 to June 5, which are fair. No regulation or diversion above station.

AVERAGE.--49 years, 761 ft³/s (21.55 m³/s), 82.68 in/yr (2,100 mm/yr), 551,300 acre-ft/yr (680 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) Dec. 2, 1977, gage height, 12.95 ft (3.947 m); minimum, 29 ft³/s (0.82 m³/s) Nov. 3, 1935, Sept. 27, 28, 1967; minimum gage height, 0.04 ft (0.012 m) Nov. 3, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,100 ft³/s (173 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	1700	10,400	295	9.95	3.033	Dec. 13	1700	11,700	331	10.48	3.194
Dec. 2	1500	*19,300	547	*12.95	3.947						

Minimum discharge, 65 ft³/s (1.84 m³/s) Aug. 10, gage height, 0.42 ft (0.128 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	472	2340	2380	584	840	665	409	737	440	190	88	112
2	395	3160	12100	552	1550	584	468	660	380	186	88	102
3	341	1690	6470	634	1590	532	508	592	340	186	86	104
4	292	1140	3770	850	1350	500	540	580	310	186	82	115
5	260	960	2610	1370	1230	465	737	536	290	178	80	133
6	265	795	3000	1930	1290	433	746	486	270	170	79	126
7	516	1060	2970	1420	1810	516	656	451	262	160	76	114
8	536	905	2180	1400	2180	687	570	426	253	157	71	114
9	451	805	1670	1510	2070	592	520	416	297	153	69	220
10	380	945	2160	1360	1610	536	490	409	362	149	68	512
11	332	855	3400	1140	1290	516	470	596	398	145	70	560
12	295	805	3480	1160	1050	483	450	568	323	140	87	402
13	275	1170	8210	1070	890	532	437	1470	383	129	115	344
14	248	2020	6140	999	790	493	500	2800	540	123	89	300
15	229	2540	4970	950	723	465	493	2560	669	125	184	265
16	216	2150	3610	955	638	447	765	1850	556	253	144	231
17	203	1650	2560	1070	588	437	910	1370	468	178	138	222
18	190	1330	2000	1170	552	426	1190	1100	405	151	100	211
19	182	1050	1580	1180	548	423	1210	910	368	136	96	188
20	174	855	1320	1100	544	412	1170	760	332	125	121	174
21	166	742	1130	1400	532	409	1320	660	308	115	136	170
22	158	674	999	1510	516	405	1800	600	297	107	125	174
23	176	822	920	1250	493	486	1640	540	277	102	123	180
24	209	1330	1040	1040	500	616	1320	560	262	100	174	158
25	311	6280	1000	930	616	805	1240	500	253	97	231	145
26	389	4500	925	870	1080	719	1250	480	243	96	182	136
27	305	2880	820	760	905	608	1310	600	222	105	145	129
28	272	2570	746	732	770	540	1180	940	207	99	123	125
29	524	3070	724	678	---	493	999	760	205	95	109	121
30	1540	2240	728	624	---	486	870	600	203	90	101	121
31	1360	---	642	670	---	437	---	500	---	88	111	---
TOTAL	11662	53313	86254	32908	28545	16148	26168	26017	10123	4314	3491	6008
MEAN	376	1777	2782	1062	1019	521	872	839	337	139	113	200
MAX	1540	6280	12100	1930	2180	805	1800	2800	669	253	231	560
MIN	158	674	642	552	493	405	409	409	203	88	68	102
CFSM	3.01	14.2	22.3	8.50	8.15	4.17	6.98	6.71	2.70	1.11	.90	1.60
IN.	3.47	15.87	25.67	9.79	8.49	4.81	7.79	7.74	3.01	1.28	1.04	1.79
AC-FT	23130	105700	171100	65270	56620	32030	51900	51600	20080	8560	6920	11920

CAL YR 1977 TOTAL 286950 MEAN 786 MAX 12100 MIN 46 CFSM 6.29 IN 85.40 AC-FT 569200
WTR YR 1978 TOTAL 304951 MEAN 835 MAX 12100 MIN 68 CFSM 6.68 IN 90.75 AC-FT 604900

14222550 EAST FORK LEWIS RIVER NEAR DOLLAR CORNER, WA

LOCATION.--Lat 45°48'53", long 122°35'26", in NE¼SW¼ sec.20, T.4 N., R.2 E., Clark County, Hydrologic Unit 17080002, 2.4 mi (3.9 km) north of Dollar Corner, 2.9 mi (4.7 km) northwest of Battleground at Daybreak Park bridge

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
05...	1005	280	49	6.4	9.7	--	1
NOV							
15...	0925	3040	34	6.2	8.4	40	5
DEC							
06...	0925	3620	29	7.0	8.5	50	8
JAN , 1978							
04...	1030	967	35	7.2	4.6	20	3
FEB							
15...	1030	816	36	7.4	5.8	10	2
MAR							
14...	0900	547	43	7.0	6.0	15	2
APR							
18...	1010	1370	36	6.9	8.0	20	4
MAY							
09...	1025	458	39	7.3	12.2	--	1
JUN							
13...	1230	420	43	7.2	14.0	--	1
JUL							
25...	0955	100	52	7.3	20.2	15	1
AUG							
15...	0950	195	53	7.3	17.2	15	1
SEP							
06...	0845	131	50	7.0	14.3	15	1

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
05...	11.6	.19	.03	.01	.00	.00
NOV						
15...	12.1	.42	.04	.02	.00	.00
DEC						
06...	12.0	.37	.06	.05	.00	.00
JAN , 1978						
04...	12.9	.32	.06	.02	.01	.03
FEB						
15...	12.9	.28	.04	.01	.00	.00
MAR						
14...	13.5	.21	.04	.02	.00	.00
APR						
18...	12.0	.31	.06	.02	.00	.00
MAY						
09...	10.8	.14	.06	.01	.00	.00
JUN						
13...	10.9	.16	.04	.01	.00	.00
JUL						
25...	8.9	.16	.04	.01	.00	.00
AUG						
15...	9.5	.10	.06	.01	.01	.03
SEP						
06...	10.3	.11	.04	.01	.00	.00

14223600 KALAMA RIVER ABOVE SPENCER CREEK, NEAR KALAMA, WA

LOCATION.--Lat 46°02'51", long 122°50'11", in SE¼NW¼ sec.32, T. 7 N., R.1 W., Cowlitz County, Hydrologic Unit 17080003, on right bank at Modrow Road Bridge, 2.1 mi (3.4 km) north of Kalama city limits, 0.6 mi (1.0 km) upstream from Spencer Creek, and at mile 2.8 (4.5 km).

DRAINAGE AREA.--202 mi² (325 km²), approximately.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May to November 1970, July 1971 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 12, 1977; minimum, 0.0°C Dec. 7-13, 1972, Jan. 9, 1973, Jan. 6-10, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 20.0°C July 22, 23, 25, Aug. 8, 9; minimum recorded, 2.5°C Nov. 21.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11.0	10.0	9.0	8.5	8.0	7.0					---	---
2	11.0	9.0	9.0	7.5	---	---					---	---
3	10.5	8.0	7.5	6.5	---	---					---	---
4	10.0	8.0	7.5	6.5	---	---					---	---
5	10.0	8.0	7.5	6.5	---	---					---	---
6	9.5	9.0	8.0	7.5	---	---					---	---
7	10.0	9.0	8.0	7.0	---	---					---	---
8	11.0	9.5	7.0	5.5	---	---					---	---
9	10.5	9.5	7.0	6.0	---	---					---	---
10	9.5	8.5	8.0	7.0	---	---					---	---
11	9.0	8.0	8.0	8.0	---	---					---	---
12	10.0	8.0	8.0	8.0	---	---					---	---
13	10.5	9.5	8.0	8.0	---	---					---	---
14	10.0	9.5	8.0	7.5	---	---					---	---
15	10.5	9.0	8.0	7.5	---	---					---	---
16	11.0	10.0	8.0	6.5	---	---					---	---
17	10.0	9.0	7.0	5.5	---	---					---	---
18	9.5	8.5	6.0	5.0	---	---					---	---
19	9.5	9.0	5.5	4.5	---	---					---	---
20	9.5	9.0	4.5	3.0	---	---					---	---
21	9.5	8.5	3.0	2.5	---	---					---	---
22	9.5	9.0	3.5	3.0	---	---					---	---
23	10.5	9.5	5.5	3.5	---	---					9.0	8.5
24	10.0	10.0	6.5	5.5	---	---					8.5	8.0
25	10.5	9.5	8.0	6.5	---	---					8.5	7.5
26	10.0	8.5	8.0	7.5	---	---					9.0	7.5
27	8.5	7.5	7.5	7.5	---	---					---	---
28	8.5	7.0	8.0	7.0	---	---					---	---
29	9.0	8.0	8.0	7.0	---	---					---	---
30	8.5	8.0	7.0	6.0	---	---					---	---
31	8.0	7.5	---	---	---	---					---	---

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	9.5	8.0	14.0	11.5	17.0	13.5	17.5	16.0	15.0	13.5
2	---	---	9.5	9.0	15.0	12.5	16.0	14.5	18.0	15.5	16.0	14.0
3	---	---	9.5	8.5	16.0	13.5	14.5	12.5	18.5	16.5	15.0	14.0
4	---	---	9.0	8.0	17.0	14.0	12.5	11.5	19.0	17.0	14.0	12.5
5	---	---	9.0	7.5	17.0	14.5	14.0	12.0	19.0	16.5	13.5	12.5
6	---	---	10.5	8.0	16.0	14.0	16.5	13.0	19.0	16.5	13.5	12.0
7	---	---	11.0	9.5	16.0	13.0	17.0	14.5	19.5	17.0	13.0	12.0
8	---	---	12.0	10.0	16.0	12.5	16.5	15.0	20.0	18.0	12.5	11.5
9	---	---	11.5	9.5	15.0	13.0	15.5	13.5	20.0	18.0	12.5	12.0
10	---	---	9.5	8.5	13.0	11.5	14.5	13.0	19.0	17.0	12.5	12.0
11	---	---	9.5	8.5	14.0	11.0	14.0	12.5	17.0	15.5	12.0	11.0
12	8.5	7.0	9.0	9.0	14.0	12.5	16.5	12.0	16.0	15.0	12.5	11.5
13	8.0	6.5	9.0	8.5	13.0	11.5	18.5	14.0	16.5	14.0	12.0	11.5
14	7.5	6.5	8.5	8.0	12.0	11.0	18.5	15.5	15.0	14.5	12.5	11.0
15	8.0	7.0	9.0	7.5	12.0	10.5	17.5	15.0	15.0	14.5	13.0	11.5
16	7.5	7.0	9.0	8.0	12.0	11.0	15.0	13.5	16.0	14.0	12.5	10.5
17	7.5	6.5	9.5	8.0	14.5	10.5	14.5	13.0	15.5	13.5	12.0	10.5
18	8.5	7.0	11.0	8.5	16.0	12.5	16.5	13.5	15.0	13.5	12.0	10.0
19	8.5	7.5	12.5	10.5	16.0	13.0	18.0	14.5	15.0	14.5	12.0	10.0
20	8.0	7.5	13.5	11.5	17.0	13.5	19.0	15.5	14.5	13.5	11.5	10.0
21	7.5	6.5	13.0	10.0	15.0	13.0	19.5	16.0	14.0	13.0	12.0	10.5
22	7.0	6.0	10.0	9.0	15.0	12.0	20.0	16.5	14.5	13.5	12.0	11.5
23	8.5	6.5	10.0	9.0	14.5	13.0	20.0	17.0	14.0	13.0	12.5	11.0
24	10.0	8.0	10.0	9.0	14.0	12.0	19.5	16.5	14.0	12.5	13.0	11.5
25	9.5	8.5	10.5	9.5	13.0	12.0	20.0	17.0	14.5	12.5	14.5	12.0
26	9.5	8.5	10.0	9.5	15.5	11.5	19.5	17.5	15.0	12.5	14.5	12.5
27	9.0	8.0	10.0	9.5	18.0	13.5	17.5	16.0	15.0	12.5	14.0	13.0
28	9.5	8.5	10.5	9.5	19.0	15.0	17.5	15.0	16.0	13.0	13.5	12.5
29	9.0	7.5	10.5	9.0	17.5	14.5	19.0	15.5	17.0	14.0	13.0	11.5
30	9.0	8.0	12.0	9.5	15.5	13.0	18.5	16.5	16.5	15.0	13.0	12.0
31	---	---	12.0	10.5	---	---	18.0	16.0	16.0	14.5	---	---
MONTH	10.0	6.0	13.5	7.5	19.0	10.5	20.0	11.5	20.0	12.5	16.0	10.0

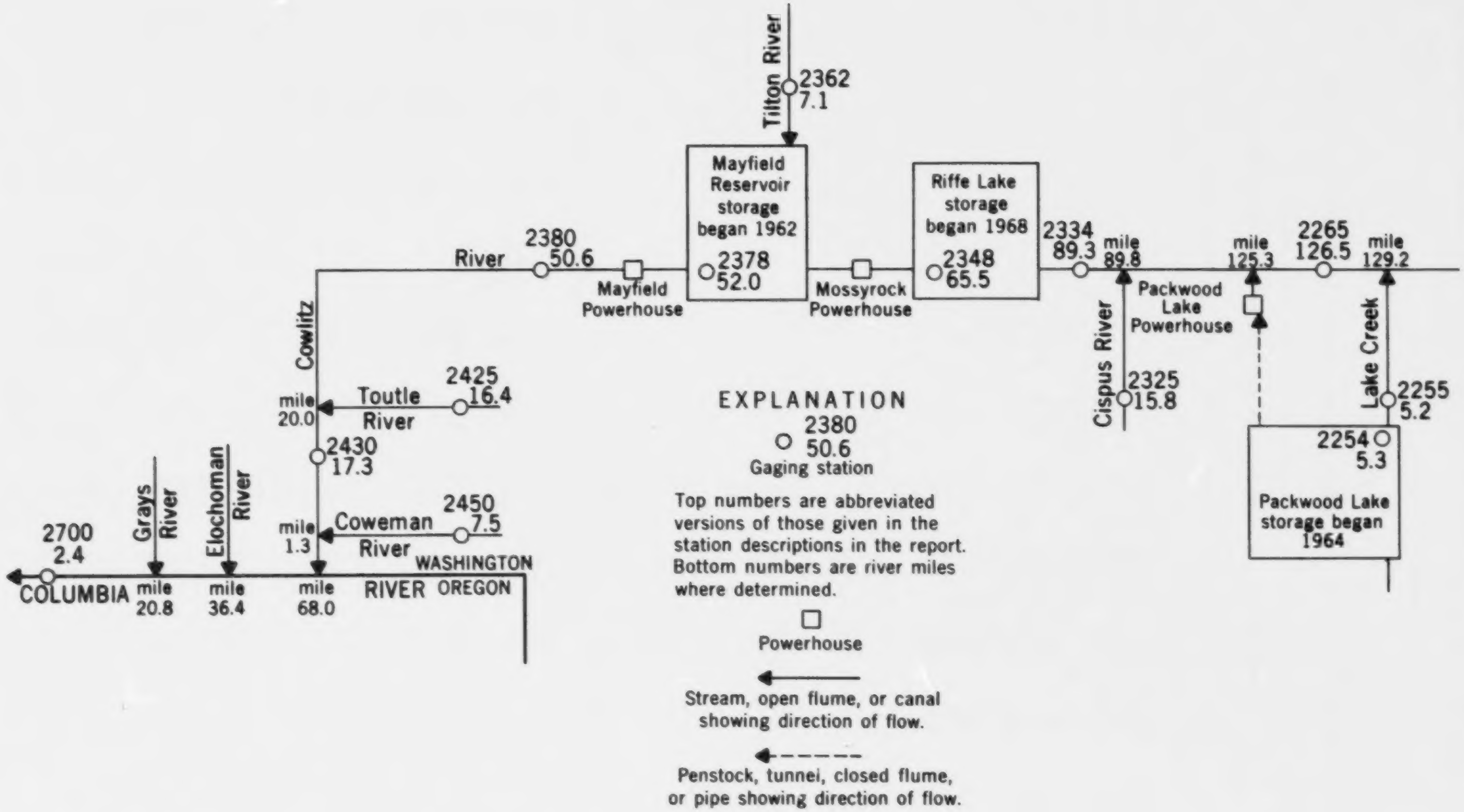
Tilton River
2362
7.1
Mayfield Reservoir storage began 1962
2378
52.0
Riffe Lake storage began 1968
2348
65.5
2380
50.6
River
Mayfield Powerhouse
Mossyrock Powerhouse
2334
89.3
mile
89.8
mile
125.3
2265
126.5
mile
129.2
Packwood Lake Powerhouse
Cispus River
2325
15.8
Lake Creek
2255
5.2
2254
5.3
Packwood Lake storage began 1964
Cowlitz
mile
20.0
Toutle River
2425
16.4
2430
17.3
mile
1.3
Coweman River
2450
7.5
WASHINGTON
OREGON
Grays River
Elochoman River
2700
2.4
COLUMBIA
mile
20.8
mile
36.4
mile
68.0
RIVER
EXPLANATION
2380
50.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 21. Gaging stations in Cowlitz River basin and downstream to mouth of Columbia River.

14225400 PACKWOOD LAKE NEAR PACKWOOD, WA

LOCATION.--Lat 46°35'47", long 121°34'07", in SW¼ sec.21, T.13 N., R.10 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, at lake outlet 4.9 mi (7.9 km) east of Packwood and at mile 5.3 (8.5 km).

DRAINAGE AREA.--19.2 mi² (49.7 km²).

PERIOD OF RECORD.--August 1959 to current year. Chemical analyses September 1969 to October 1970.

REVISED RECORDS.--WSP 1935: 1959-60, drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Sept. 23, 1964, at site on north side of lake 1,500 ft (457 m) east of outlet at same datum.

REMARKS.--Reservoir is formed by low concrete dam at lake outlet completed during October 1963. Draft from the lake for continuous power generation began June 1, 1964. Regulation of lake elevations between 2,850.5 ft (868.83 m) and 2,858.5 ft (871.27 m) is allowed by stipulation of Federal Power Commission. Elevation of lake maintained between 2,856.5 ft (870.66 m) and 2,857.5 ft (870.97 m) during the summer season for forestry and fisheries protection and retention of natural scenic effect. No regulation or diversion above lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 2,861.77 ft (872.267 m) Dec. 2, 1977; minimum, 2,850.50 ft (868.832 m) Oct. 4, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum elevetion, 2,861.77 ft (872.267 m) Dec. 2; minimum, 2,850.64 ft (868.875 m) Oct. 3.

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2851.00	2856.38	2857.93	2853.84	2853.79	2853.79	2855.75	2856.44	2856.55	2856.83	2856.52	2856.81
2	2850.82	2857.18	2860.74	2853.77	2853.78	2853.75	2856.08	2856.44	2856.75	2856.81	2856.63	2856.84
3	2850.69	2857.58	2861.19	2853.80	2853.77	2853.71	2856.39	2856.48	2856.75	2856.67	2856.74	2856.82
4	2850.85	2857.48	2860.11	2853.89	2853.75	2853.69	2856.39	2856.52	2856.89	2856.59	2856.69	2856.76
5	2851.01	2857.27	2859.36	2853.93	2853.72	2853.65	2856.37	2856.55	2857.11	2856.59	2856.65	2856.72
6	2851.22	2857.03	2859.11	2854.00	2853.73	2853.61	2856.30	2856.55	2857.40	2856.65	2856.57	2856.69
7	2851.42	2856.85	2859.05	2854.03	2853.77	2853.58	2856.27	2856.53	2857.43	2856.73	2856.54	2856.60
8	2851.60	2856.60	2858.80	2854.10	2853.85	2853.51	2856.26	2856.49	2857.32	2856.71	2856.75	2856.51
9	2851.78	2856.36	2858.55	2854.14	2853.97	2853.39	2856.28	2856.49	2857.19	2856.63	2856.82	2856.60
10	2851.94	2856.21	2858.32	2854.18	2854.01	2853.31	2856.28	2856.57	2857.04	2856.64	2856.80	2856.83
11	2852.11	2856.10	2858.40	2854.25	2854.02	2853.27	2856.30	2856.67	2856.78	2856.58	2856.72	2856.94
12	2852.27	2855.92	2858.70	2854.47	2854.01	2853.24	2856.28	2856.58	2856.51	2856.55	2856.64	2856.75
13	2852.44	2855.73	2859.23	2854.50	2853.99	2853.21	2856.28	2856.69	2856.45	2856.65	2856.60	2856.61
14	2852.62	2855.64	2860.00	2854.49	2853.97	2853.17	2856.28	2857.05	2856.43	2856.68	2856.51	2856.50
15	2852.79	2855.64	2859.93	2854.49	2853.97	2853.12	2856.27	2857.28	2856.43	2856.73	2856.73	2856.41
16	2852.97	2855.64	2859.55	2854.47	2853.96	2853.05	2856.35	2857.07	2856.42	2856.93	2856.86	2856.36
17	2853.14	2855.45	2858.97	2854.47	2853.94	2852.89	2856.41	2856.67	2856.41	2856.93	2856.83	2856.25
18	2853.31	2855.29	2858.57	2854.45	2853.91	2852.83	2856.45	2856.36	2856.45	2856.76	2856.72	2856.10
19	2853.47	2855.09	2858.16	2854.36	2853.91	2852.77	2856.52	2856.57	2856.50	2856.65	2856.72	2855.94
20	2853.62	2854.85	2857.71	2854.09	2853.90	2852.86	2856.56	2856.81	2856.56	2856.60	2856.71	2855.77
21	2853.78	2854.62	2857.30	2854.25	2853.89	2853.00	2856.54	2857.17	2856.57	2856.56	2856.70	2855.60
22	2853.94	2854.56	2856.88	2854.55	2853.87	2853.15	2856.51	2857.07	2856.59	2856.59	2856.69	2855.45
23	2854.12	2854.53	2856.41	2854.75	2853.83	2853.35	2856.51	2856.73	2856.51	2856.68	2856.68	2855.30
24	2854.33	2854.48	2855.91	2854.56	2853.81	2853.59	2856.48	2856.53	2856.61	2856.71	2856.71	2855.10
25	2854.64	2854.90	2855.39	2854.26	2853.82	2853.84	2856.43	2856.59	2856.71	2856.67	2856.82	2854.83
26	2854.87	2856.71	2854.83	2854.10	2853.82	2854.07	2856.47	2856.56	2856.69	2856.66	2856.83	2854.50
27	2855.04	2857.27	2854.32	2853.98	2853.82	2854.28	2856.56	2856.51	2856.55	2856.77	2856.75	2854.17
28	2855.20	2857.34	2854.18	2853.93	2853.81	2854.51	2856.64	2856.59	2856.58	2856.65	2856.66	2853.78
29	2855.41	2857.65	2854.11	2853.90	---	2854.76	2856.62	2856.64	2856.69	2856.50	2856.62	2853.36
30	2855.75	2857.85	2854.04	2853.86	---	2855.06	2856.54	2856.53	2856.76	2856.37	2856.60	2852.93
31	2856.08	---	2853.96	2853.81	---	2855.40	---	2856.45	---	2856.41	2856.71	---
MEAN	2853.04	2856.14	2857.73	2854.18	2853.87	2853.59	2856.38	2856.65	2856.72	2856.66	2856.69	2855.86
MAX	2856.08	2857.85	2861.19	2854.75	2854.02	2855.40	2856.64	2857.28	2857.43	2856.93	2856.86	2856.94
MIN	2850.69	2854.48	2853.96	2853.77	2853.72	2852.77	2855.75	2856.36	2856.41	2856.37	2856.51	2852.93

CAL YR 1977 MEAN 2855.60 MAX 2861.19 MIN 2850.69
WTR YR 1978 MEAN 2855.63 MAX 2861.19 MIN 2850.69

14225500 LAKE CREEK NEAR PACKWOOD, WA

LOCATION.--Lat 46°35'47", long 121°34'08", in SW¼ sec.21, T.13 N., R.10 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 500 ft (152 m) downstream from outlet of Packwood Lake, 4.8 mi (7.7 km) east of Packwood and at mile 5.2 (8.4 km).

DRAINAGE AREA.--19.2 mi² (49.7 km²).

PERIOD OF RECORD.--September 1911 to September 1924 (published as "at outlet of Packwood Lake, near Lewis"), September 1930 to October 1942, October 1949 to May 1954, August 1959 to current year.

REVISED RECORDS.--WSP 394: 1912. WSP 1318: 1931. WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,844.62 ft (867.040 m) National Geodetic Vertical Datum of 1929 (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Aug. 3, 1918, nonrecording gages at several sites at or within 100 ft (30 m) of present site at various datums. Aug. 3, 1918, to Sept. 30, 1924, water-stage recorder at site 110 ft (34 m) upstream at different datum.

REMARKS.--Records good. Since June 1, 1964, flow regulated by continuous operation of the powerplant which controls and diverts the outflow of the lake. Water diverted for power generation is not returned to Lake Creek.

AVERAGE DISCHARGE.--33 years (water years 1912-24, 1931-42, 1950-53, 1960-63), 101 ft³/s (2.86 m³/s), 71.44 in/yr (1,815 mm/yr), 73,120 acre-ft/yr (90.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,690 ft³/s (47.9 m³/s) Dec. 2, 1977, gage height, 7.15 (2.179 m); probably no flow at times during October 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft³/s (47.9 m³/s) Dec. 2, gage height, 7.15 ft (2.179 m); minimum, 2.8 ft³/s (0.079 m³/s) Nov. 26, Mar. 30, 31; minimum daily 3.0 ft³/s (0.085 m³/s) Mar. 11-13, Mar. 30-Apr. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.8	10	4.4	3.1	4.0	3.0	5.6	5.6	6.8	7.1	6.3
2	3.2	4.0	1010	4.4	3.1	4.0	3.1	5.6	5.6	6.8	7.1	6.3
3	3.7	4.0	1220	4.4	3.1	4.0	3.6	5.6	5.6	6.8	7.1	6.3
4	4.0	4.0	548	4.5	3.1	4.0	5.1	5.6	5.6	6.8	8.1	6.3
5	8.0	4.0	210	4.5	3.1	4.0	5.3	5.6	5.8	6.8	10	6.3
6	6.7	3.8	133	5.6	3.1	4.0	5.3	5.6	6.0	6.8	10	6.3
7	7.0	3.8	111	4.0	3.1	3.8	5.3	5.6	6.0	6.8	10	6.3
8	7.0	4.7	49	4.0	3.1	4.7	5.3	5.6	8.1	6.8	10	6.3
9	7.2	4.9	13	4.0	3.3	4.9	5.3	5.6	10	6.8	9.1	6.3
10	7.5	4.9	11	4.2	4.0	4.0	5.3	5.6	10	6.8	7.6	6.3
11	7.5	4.9	12	4.2	4.0	3.0	5.3	5.6	10	6.8	7.6	6.3
12	7.7	4.7	42	4.4	4.0	3.0	5.3	5.6	7.2	6.8	7.6	6.3
13	6.2	4.7	192	4.4	4.0	3.0	5.3	5.6	5.3	7.1	7.6	6.3
14	3.8	4.7	491	4.4	4.0	3.4	5.3	5.6	5.1	7.1	7.6	6.1
15	4.0	4.7	446	4.4	4.0	3.6	5.3	5.6	5.1	7.1	6.8	6.1
16	4.0	4.7	275	4.4	4.0	3.6	5.3	5.6	5.1	7.1	6.3	6.1
17	4.2	4.4	92	4.4	4.0	3.6	5.3	5.6	5.1	7.1	6.3	6.1
18	4.2	4.4	19	4.4	4.0	3.6	5.6	5.6	5.1	7.1	6.3	6.1
19	4.7	4.2	7.1	3.6	4.0	3.6	5.6	5.6	5.1	7.1	6.3	5.8
20	5.1	4.2	4.9	3.8	4.0	3.6	5.6	5.6	5.1	7.1	6.3	5.8
21	5.1	4.2	5.3	4.7	4.0	3.6	5.6	5.6	5.1	7.1	6.3	5.8
22	5.1	4.2	4.9	4.7	4.0	3.8	5.6	5.6	5.1	7.1	6.3	5.6
23	5.3	4.2	4.7	4.5	4.0	3.8	5.6	5.6	5.3	7.1	6.3	5.6
24	5.5	4.2	4.5	4.5	4.0	4.0	5.6	6.6	5.3	7.1	6.3	5.3
25	5.8	5.3	4.4	3.3	4.0	4.2	5.6	6.3	5.3	7.1	6.3	5.3
26	5.8	8.7	4.0	3.3	4.0	4.2	5.6	6.0	5.3	7.1	6.3	5.1
27	5.8	14	4.0	5.1	4.0	4.4	5.6	6.0	5.1	7.1	6.3	4.9
28	6.0	9.2	4.4	3.1	4.0	4.4	5.6	6.0	5.3	7.1	6.3	4.7
29	6.0	6.5	4.4	3.1	---	3.8	5.6	6.0	6.6	7.1	6.3	4.5
30	6.2	7.2	4.5	3.1	---	3.0	5.6	5.8	7.1	7.1	6.3	4.4
31	5.3	---	4.5	3.1	---	3.0	---	5.8	---	7.1	6.3	---
TOTAL	171.1	155.2	4945.6	128.9	104.1	117.6	156.5	177.3	182.0	216.5	224.1	175.2
MEAN	5.52	5.17	160	4.16	3.72	3.79	5.22	5.72	6.07	6.98	7.23	5.84
MAX	8.0	14	1220	5.6	4.0	4.9	5.6	6.6	10	7.1	10	6.3
MIN	3.2	3.8	4.0	3.1	3.1	3.0	3.0	5.6	5.1	6.8	6.3	4.4
AC-FT	339	308	9810	256	206	233	310	352	361	429	445	348

CAL YR 1977 TOTAL 6455.5 MEAN 17.7 MAX 1220 MIN 2.8 AC-FT 12800
WTR YR 1978 TOTAL 6754.1 MEAN 18.5 MAX 1220 MIN 3.0 AC-FT 13400

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'47", long 121°40'41", in SE¼SE¼ sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 1780004, on right bank 8 ft (2.4 m), upstream from Forest Service bridge, 0.6 mi (1.0 km) northwest of Packwood, 0.8 mi (1.3 km) upstream from Skate Creek, and at mile 126.5 (203.5 km).

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.-July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19, water temperatures, November 1970 to April 1971.

REVISED RECORDS.--WSP 884: 1938. WSP 1348: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft (319.43 m) National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi (1.6 km) upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum.

REMARKS.--Records good except those for period December 6 to February 7, which are fair. Minor regulation by Packwoo Lake (see sta 14225400) beginning June 1964. Small diversions for domestic use. Water is diverted from Packwood Lake for power generation and is discharged into Cowlitz River about 1 mi (1.6 km) downstream from this station, monthly mean diversion, in cubic feet per second, for the current water year as furnished by the Washington Power Supply system, is as follows:

October..........	6.5	January..........	62.9	April..........	64.5	July	132
November.........	13.7	February.........	52.5	May............	117	August.......	73.2
December.........	155	March............	32.4	June...........	181	September....	94.6

AVERAGE DISCHARGE.--57 years, (water years 1912-19, 1930-78), 1,642 ft³/s (46.50 m³/s), 1,190,000 acre-ft/yr (1,470 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s (1,037 m³/s) Dec. 21, 1933, gage height, 13.0 ft (3.96 m); minimum discharge, 130 cfs (3.68 m³/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft³/s (212 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2300	9,100	258	7.60	2.316
Nov. 25	2000	20,400	578	10.86	3.310
Dec. 2	1045	*36,200	1,030	*13.73	4.185
Dec. 13	1715	16,300	462	9.85	3.002

Minimum discharge, 308 ft³/s (8.72 m³/s) Oct. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	690	3240	7650	776	748	825	1790	1490	1700	2240	839	938
2	624	4990	27700	790	783	776	1530	1560	1900	2160	848	893
3	540	3030	12800	882	898	734	1360	1540	2600	1890	920	806
4	480	2200	6750	995	958	720	1230	1420	3400	1780	938	750
5	455	1650	3720	1100	1010	687	1150	1260	3700	1740	884	750
6	450	1340	3720	1130	1130	661	1050	1160	4000	1840	806	766
7	540	1470	3460	1130	1210	762	972	1220	3120	1920	798	686
8	460	1120	2340	1740	1210	912	927	1410	2920	1960	790	646
9	450	1110	1960	2120	1150	839	875	1740	3300	1780	798	947
10	430	3260	1980	1790	1060	811	950	1920	2810	1510	750	1210
11	410	3000	5880	1530	980	797	1150	1720	2410	1310	702	1030
12	390	2430	5270	1410	905	762	1070	1500	2380	1290	710	893
13	410	2190	10700	1300	846	755	1040	2070	2470	1440	662	798
14	390	2580	11700	1290	804	707	987	3440	2200	1510	576	718
15	380	3040	7800	1290	769	681	942	2990	1980	1520	866	686
16	410	2720	4670	1220	720	668	987	2390	1820	1860	766	630
17	380	2140	3650	1110	687	681	920	2090	1820	1650	614	614
18	356	1650	2570	1070	681	755	980	2010	2310	1480	548	583
19	348	1330	2040	1000	681	811	1040	2310	2550	1380	562	548
20	328	1040	1630	950	700	890	1160	3050	2580	1340	513	527
21	324	881	1530	1010	776	1010	1130	3300	2620	1360	507	507
22	316	839	1330	1030	853	1270	1110	2480	2440	1370	548	598
23	440	811	1190	965	935	1620	1100	1930	2240	1370	527	1430
24	612	790	1110	905	980	1720	1110	1650	1960	1260	662	1310
25	1090	9020	1070	898	987	1920	1200	1490	1800	1140	726	1060
26	790	11700	1000	875	987	2000	1630	1410	1710	1190	646	929
27	618	5860	920	846	935	1900	1940	1690	2020	1240	562	857
28	540	5100	928	818	882	2130	1920	2170	2490	1040	534	766
29	895	7500	958	804	---	2290	1740	1850	2580	956	534	702
30	1490	5120	942	776	---	2310	1610	1610	2200	911	614	678
31	1320	---	853	762	---	2100	---	1600	---	875	790	---
TOTAL	17356	93151	139821	34312	25265	35504	36600	59470	74030	46312	21540	24256
MEAN	560	3105	4510	1107	902	1145	1220	1918	2468	1494	695	809
MAX	1490	11700	27700	2120	1210	2310	1940	3440	4000	2240	938	1430
MIN	316	790	853	762	681	661	875	1160	1700	875	507	507
CFSM	1.95	10.8	15.7	3.86	3.14	3.99	4.25	6.68	8.60	5.21	2.42	2.82
IN.	2.25	12.07	18.12	4.45	3.27	4.60	4.74	7.71	9.60	6.00	2.79	3.14
AC-FT	34430	184800	277300	68060	50110	70420	72600	118000	146800	91860	42720	48110

CAL YR 1977 TOTAL 542894 MEAN 1487 MAX 27700 MIN 316 CFSM 5.18 IN 70.37 AC-FT 1077000
WTR YR 1978 TOTAL 607617 MEAN 1665 MAX 27700 MIN 316 CFSM 5.80 IN 78.76 AC-FT 1205000

14232500 CISPUS RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°26'50", long 121°51'46", in NW¼ sec.18, T.11 N., R.8 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 60 ft (18 m) upstream from bridge to Tower Rock ranger station, 4.1 mi (6.6 km) downstream from North Fork, 8.0 mi (12.9 km) southeast of Randle, and at mile 15.8 (25.4 km).

DRAINAGE AREA.--321 mi² (831 km²).

PERIOD OF RECORD.--October 1910 to February 1912, September 1929 to current year. Water temperatures May 1950 to September 1972.

REVISED RECORDS.--WSP 794: 1934. WSP 1288: Drainage area. WSP 1935: 1950-53, 1954(M), 1955-56, 1957(M) 1960.

GAGE.--Water-stage recorder. Datum of gage is 1,221.60 ft (372.344 m) National Geodetic Vertical Daum of 1929. Prior to Mar. 1, 1912, nonrecording gage at site 1 mi (1.6 km) upstream at different datum. Sept. 28, 1929, to Nov. 26, 1949, Oct. 1-24, 1950, water-stage recorder at site 450 ft (137 m) upstream at datum 0.26 ft (0.079 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--50 years (water years 1911, 1930-78), 1,345 ft³/s (38.09 m³/s), 56.90 in/yr (1,445 mm/yr), 974,500 acre-ft/yr (1,200 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s (615 m³/s) Jan. 15, 1974, gage height, 12.58 ft (3.834 m), from rating curve extended above 8,700 ft³/s (246 m³/s) on basis of slope-area measurement of peak flow; minimum, 183 ft³/s (5.18 m³/s), Dec. 10, 1936; minimum gage height, 2.55 ft (0.777 m) Oct. 25, 1942, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	2345	6,320	179	7.46	2.274
Dec. 2	1645	*21,200	600	*12.15	3.703
Dec. 13	2030	12,500	354	9.28	2.829
May 14	1845	4,110	116	6.33	1.929

Minimum discharge, 317 ft³/s (8.98 m³/s) Oct. 22, 23, gage height, 2.93 ft (0.893 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	551	1350	3180	829	861	861	1740	1740	1700	1150	559	535
2	522	2840	14800	813	910	821	1540	1670	1940	1190	553	529
3	496	1960	11900	861	997	782	1370	1620	2120	1070	559	524
4	473	1500	6320	944	1010	775	1270	1530	2300	1010	571	507
5	451	1250	4270	1070	1150	745	1240	1380	2470	988	565	535
6	440	1060	4150	1100	1440	723	1120	1290	2460	979	535	565
7	462	1070	3970	1030	1640	861	1050	1240	2090	961	529	524
8	437	930	3300	1300	1800	1110	1010	1280	1950	927	524	507
9	422	869	2820	1760	1710	997	961	1430	1980	919	529	723
10	406	1140	2790	1780	1490	953	997	1530	1870	853	513	961
11	391	1240	4480	1620	1340	919	1110	1530	1730	797	485	861
12	383	1240	4940	1500	1210	877	1060	1420	1610	782	496	760
13	377	1340	8280	1420	1120	853	1030	1900	1580	775	485	709
14	371	1580	11400	1460	1040	813	1010	3740	1470	797	465	667
15	362	1990	8280	1540	979	775	979	3660	1350	797	595	634
16	359	2060	5720	1480	919	752	1080	3080	1270	961	621	601
17	352	1760	4330	1410	877	752	1020	2650	1230	837	529	627
18	343	1510	3390	1320	845	782	1250	2400	1290	775	485	595
19	336	1290	2750	1240	837	805	1480	2400	1340	752	480	571
20	331	1090	2300	1170	853	845	1540	2750	1330	745	475	541
21	325	976	2010	1260	893	919	1470	2830	1350	709	480	524
22	321	938	1770	1250	927	1060	1420	2500	1310	702	480	524
23	343	902	1600	1140	961	1310	1370	2120	1240	702	480	589
24	356	883	1470	1090	997	1590	1340	1850	1160	688	589	589
25	479	2960	1350	1060	997	1830	1460	1700	1150	653	667	559
26	459	5560	1250	1020	1010	1910	1820	1580	1050	702	571	541
27	417	3920	1140	970	961	1790	2110	1590	1060	767	518	529
28	401	3070	1090	944	910	1800	2130	1730	1170	640	491	507
29	558	3570	1050	910	---	1900	2060	1700	1290	601	480	491
30	1210	3140	997	869	---	1980	1920	1590	1170	583	485	480
31	1050	---	927	853	---	1900	---	1580	---	577	571	---
TOTAL	14184	54988	128024	37033	30684	34790	40957	61010	47030	25389	16365	17809
MEAN	458	1833	4130	1195	1096	1122	1365	1968	1568	819	528	594
MAX	1210	5560	14800	1780	1800	1980	2130	3740	2470	1190	667	961
MIN	321	869	927	813	837	723	961	1240	1050	577	465	480
CFSM	1.43	5.71	12.9	3.72	3.41	3.50	4.25	6.13	4.89	2.55	1.65	1.85
IN.	1.64	6.37	14.86	4.29	3.56	4.03	4.75	7.07	5.45	2.94	1.90	2.06
AC-FT	28130	109100	253900	73450	60860	69010	81240	121000	93280	50360	32460	35320

CAL YR 1977 TOTAL 424536 MEAN 1163 MAX 14800 MIN 315 CFSM 3.62 IN 49.20 AC-FT 842100
WTR YR 1978 TOTAL 508263 MEAN 1393 MAX 14800 MIN 321 CFSM 4.34 IN 58.90 AC-FT 1008000

14233400 COWLITZ RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°28'13", long 122°05'51", in NE¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.5 mi (0.8 km) downstream from Cispus River, 8.1 mi (13.0 km) southwest of Randle, and at mile 89.3 (143.7 km).

DRAINAGE AREA.--1,030 mi² (2,668 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD. October 1947 to current year. Prior to October 1967, published as "near Kosmos". Records published for both sites October 1967 to September 1968. Monthly discharge only for some period published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 792.30 ft (241.493 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to Dec. 3, 1948, nonrecording gage at site 0.9 mi (1.4 km) downstream at different datum. Dec. 3, 1948, to September 1967, at site 1.4 mi (2.3 km) downstream at datum 33.01 ft (10.061 m) lower (levels by city of Tacoma).

REMARKS.--Water-discharge records excellent. Minor regulation by Packwood Lake (14225400) beginning June 1964. Small diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--31 years, 5,058 ft³/s (143.2 m³/s) 66.69 in/yr (1,694 mm/yr), 3,665,000 acre-ft/yr (4,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,300 ft³/s (2,530 m³/s) Dec. 3, 1977, gage height, 26.54 ft (8.089 m); minimum, 518 ft³/s (14.7 m³/s) Nov. 29, 1952, gage height, 2.34 ft (0.713 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 26	0930	28,200	799	16.91	5.154	Dec. 3	0600	*89,300	2,530	*26.54	8.089
Nov. 29	1615	19,500	552	14.72	4.487	Dec. 14	1645	39,800	1,130	19.39	5.910

Minimum discharge, 1,040 ft³/s (29.5 m³/s) Oct. 22, 23, minimum gage height, 6.43 ft (1.960 m) Oct. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2150	3980	13700	3300	3200	3060	5550	5730	5280	4320	2000	2030
2	2030	12900	46500	3170	3360	2900	4970	5430	6170	4520	1940	2210
3	1910	8750	74100	3270	3640	2760	4510	5310	7100	4060	2010	2050
4	1740	6300	36000	3640	3750	2710	4200	5050	7970	3820	2140	2000
5	1620	5050	20200	4060	3940	2630	4050	4650	8730	3640	2120	1960
6	1540	4270	15900	4490	4540	2530	3750	4300	8850	3660	1960	2090
7	1620	4320	16600	4270	4940	2660	3530	4130	7280	3700	1910	1950
8	1550	3890	13100	4970	5310	3300	3350	4230	6550	3780	1840	1810
9	1470	3600	10400	6510	5100	3180	3180	4670	6770	3670	1860	2120
10	1420	5010	9400	6460	4690	3060	3170	5120	6710	3290	1850	3200
11	1360	6600	15400	5890	4330	2990	3450	5240	5850	3000	1760	2970
12	1320	5920	18800	5410	3990	2900	3500	4960	5510	2830	1760	2710
13	1290	5660	24700	5100	3740	2860	3410	5650	5430	2830	1770	2450
14	1270	6560	38000	5120	3510	2760	3320	10600	5180	3020	1610	2290
15	1230	8650	34200	5240	3360	2650	3230	11600	4790	2970	1880	2140
16	1230	9240	23500	5050	3170	2580	3440	9650	4470	3510	2240	2020
17	1210	7750	16200	4900	3020	2570	3350	8250	4230	3420	1860	2040
18	1160	6440	12200	4630	2900	2620	3590	7390	4560	3080	1640	1950
19	1130	5420	10000	4390	2890	2710	4160	7080	5010	2880	1580	1850
20	1110	4650	8370	4180	2860	2820	4540	8130	5090	2850	1550	1780
21	1080	4080	7300	4210	2960	3020	4540	8930	5200	2760	1500	1720
22	1060	3790	6570	4370	3090	3440	4540	8010	4970	2720	1510	1730
23	1080	3570	5940	4060	3240	4110	4520	6730	4760	2740	1560	2540
24	1220	3610	5430	3930	3390	4900	4440	5790	4280	2750	1640	3260
25	1720	8430	5070	3860	3450	5450	4630	5220	4080	2540	2100	2720
26	1830	26900	4720	3800	3530	6080	5450	4850	3830	2560	1930	2450
27	1600	20700	4370	3590	3410	5770	6490	4870	3900	2830	1720	2300
28	1470	15300	4080	3480	3230	5730	6970	5690	4420	2520	1590	2170
29	1720	17100	3990	3390	---	6190	6770	5590	5070	2290	1540	2050
30	3050	15700	3850	3240	---	6230	6290	5140	4540	2200	1540	1960
31	3540	---	3610	3180	---	6130	---	5010	---	2080	1910	---
TOTAL	48730	244140	512200	135160	102540	113300	130890	193000	166580	96840	55820	66520
MEAN	1572	8138	16520	4360	3662	3655	4363	6226	5553	3124	1801	2217
MAX	3540	26900	74100	6510	5310	6230	6970	11600	8850	4520	2240	3260
MIN	1060	3570	3610	3170	2860	2530	3170	4130	3830	2080	1500	1720
CFSM	1.53	7.90	16.0	4.23	3.56	3.55	4.24	6.05	5.39	3.03	1.75	2.15
IN.	1.76	8.82	18.50	4.88	3.70	4.09	4.73	6.97	6.02	3.50	2.02	2.40
AC-FT	96660	484300	1016000	268100	203400	224700	259600	382800	330400	192100	110700	131900

CAL YR 1977 TOTAL 1616690 MEAN 4429 MAX 74100 MIN 1060 CFSM 4.30 IN 58.39 AC-FT 3207000
WTR YR 1978 TOTAL 1865720 MEAN 5112 MAX 74100 MIN 1060 CFSM 4.96 IN 67.38 AC-FT 3701000

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1952 to August 1968, April 1969 to current year.

INSTRUMENTATION.--Temperature recorder November 1952 to August 1968, April 1969 to current year.

REMARKS.--Interruptions in the record due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C Aug. 1, 4, 1977; minimum, 0.0°C Jan. 20, 1962, Dec. 9, 10, 1972, Jan. 6-10, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 18.5°C Aug. 3, 4, 7, 8, 9; minimum, 1.0°C Nov. 20, 21, Jan. 1, 2.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
NOV , 1977										
09...	1345	3580	50	7.4	5.6	1	11.9	K200	7	.03
DEC										
06...	1555	15700	40	7.0	4.8	60	11.6	K44	K7	.11
JAN , 1978										
10...	1520	6380	44	7.4	5.2	15	11.7	K48	K10	.07
FEB										
08...	1455	5310	45	7.5	5.4	3	11.7	K44	<2	.04
MAR										
07...	1520	2670	55	7.2	6.8	1	11.7	K25	<1	.01
APR										
04...	1510	4160	45	7.6	7.0	1	11.6	40	<2	.00
MAY										
02...	1500	5450	47	7.4	8.5	1	11.3	86	3	.01
JUN										
13...	1325	5570	39	7.4	10.3	1	11.0	K100	8	.01
JUL										
18...	1405	3140	43	7.5	13.7	6	10.1	K160	K130	.01
AUG										
15...	1435	1890	55	7.4	13.4	5	10.1	58	56	.01
SEP										
13...	1310	2450	52	7.4	12.0	2	10.6	270	8	.01

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)
NOV , 1977										
09...	.02	.09	.11	.14	.60	.02	.01	.03	16	155
DEC										
06...	.05	.15	.20	.31	1.4	.99	.01	.03	--	--
JAN , 1978										
10...	.03	.07	.10	.17	.80	.06	.01	.03	103	1770
FEB										
08...	.07	.07	.14	.18	.80	.02	.01	.03	--	--
MAR										
07...	.01	.05	.06	.07	.30	.01	.01	.03	7	50
APR										
04...	.06	.10	.16	.16	.70	.01	.00	.00	37	416
MAY										
02...	.03	.05	.08	.09	.40	.01	.00	.00	10	147
JUN										
13...	.02	.05	.07	.08	.40	.02	.01	.03	18	271
JUL										
18...	.04	.02	.06	.07	.30	.02	.02	.06	15	127
AUG										
15...	.04	.06	.10	.11	.50	.03	.01	.03	--	--
SEP										
13...	.02	.06	.08	.09	.40	.02	.02	.06	--	--

K Results based upon colony counts outside the ideal range.

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	7.0	6.5	6.5	5.5	4.5	5.0	2.5	1.0	1.5
2	---	---	---	7.0	5.5	6.0	6.0	5.5	6.0	2.0	1.0	1.5
3	---	---	---	5.5	5.0	5.0	---	---	---	3.0	2.0	2.5
4	---	---	---	5.5	5.0	5.5	---	---	---	4.0	3.0	3.5
5	---	---	---	6.0	5.5	5.5	---	---	---	4.5	4.0	4.0
6	---	---	---	6.5	6.0	6.0	---	---	---	4.0	4.0	4.0
7	---	---	---	6.5	5.5	6.0	---	---	---	4.0	3.5	4.0
8	---	---	---	5.5	5.0	5.0	---	---	---	5.0	4.0	4.5
9	---	---	---	5.5	5.0	5.5	---	---	---	4.5	4.5	4.5
10	---	---	---	6.0	5.5	6.0	---	---	---	4.5	4.5	4.5
11	---	---	---	6.0	5.5	6.0	---	---	---	4.5	4.5	4.5
12	---	---	---	6.0	6.0	6.0	---	---	---	5.0	4.5	5.0
13	---	---	---	6.5	6.0	6.0	---	---	---	5.0	4.5	4.5
14	10.0	8.5	9.5	6.5	5.5	6.0	---	---	---	5.0	4.5	5.0
15	10.5	9.5	10.0	6.0	5.5	5.5	---	---	---	5.5	5.0	5.0
16	11.0	10.0	10.5	6.0	5.0	5.5	---	---	---	5.0	4.5	5.0
17	10.0	9.0	9.5	5.0	4.5	5.0	---	---	---	5.0	5.0	5.0
18	9.5	8.5	9.0	4.5	4.0	4.0	---	---	---	5.0	4.5	5.0
19	9.0	8.0	8.5	4.0	3.0	3.5	---	---	---	5.5	5.0	5.0
20	9.0	8.0	8.5	3.0	1.0	2.0	---	---	---	5.5	5.5	5.5
21	9.0	8.0	8.5	1.0	1.0	1.0	---	---	---	---	---	---
22	9.0	8.0	8.5	2.5	1.5	1.5	---	---	---	---	---	---
23	10.0	9.0	9.5	3.5	2.5	3.0	4.0	4.0	4.0	---	---	---
24	10.0	9.0	9.5	4.5	3.5	4.0	5.0	4.0	4.5	---	---	---
25	9.5	8.5	9.0	5.0	4.0	4.5	5.5	5.0	5.0	---	---	---
26	8.5	7.5	8.0	5.0	4.0	5.0	5.0	3.5	4.5	5.0	4.5	4.5
27	7.5	6.5	7.0	5.5	5.0	5.0	3.5	3.0	3.0	4.5	4.0	4.5
28	7.0	6.0	6.5	5.5	5.0	5.5	3.5	3.0	3.0	5.0	4.5	5.0
29	7.5	7.0	7.5	6.0	5.0	5.5	4.5	3.5	4.0	5.5	4.5	5.0
30	7.5	6.5	7.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5
31	6.5	6.0	6.5	---	---	---	4.5	2.5	3.5	4.5	4.0	4.5
MONTH	11.0	6.0	8.5	7.0	1.0	5.0	6.0	2.5	4.5	5.5	1.0	4.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.0	4.5	4.5	4.0	3.0	3.5	6.5	6.0	6.5	8.0	7.5	8.0
2	5.0	4.5	5.0	3.5	3.0	3.0	6.0	5.5	6.0	8.5	8.0	8.0
3	5.5	5.0	5.0	4.0	3.0	3.5	7.0	6.0	6.5	8.5	7.5	8.0
4	6.0	5.0	5.5	4.5	3.5	4.5	7.0	6.5	7.0	7.5	6.5	7.0
5	6.0	5.5	5.5	5.5	4.5	5.0	6.5	5.5	6.0	8.5	6.0	7.5
6	5.5	5.5	5.5	6.5	5.5	6.0	6.0	5.0	5.5	9.5	7.5	8.5
7	5.5	5.0	5.5	6.0	5.5	6.0	7.0	5.5	6.5	10.5	8.0	9.5
8	5.5	4.5	5.0	6.5	5.0	6.0	8.0	6.5	7.0	10.5	8.5	10.0
9	5.5	4.5	5.0	6.5	5.0	6.0	8.5	6.0	7.5	9.5	8.0	9.0
10	4.5	4.5	4.5	6.0	5.0	5.5	10.0	7.5	9.0	8.0	7.5	8.0
11	4.5	3.5	4.0	---	---	---	9.0	7.0	8.0	7.5	7.0	7.5
12	3.5	3.0	3.5	---	---	---	8.5	6.5	7.5	7.5	7.0	7.5
13	4.0	3.0	4.0	---	---	---	8.0	7.0	7.5	7.5	7.5	7.5
14	5.0	4.5	4.5	---	---	---	7.5	7.0	7.5	7.5	7.0	7.0
15	5.5	4.0	5.0	---	---	---	8.0	7.0	7.5	8.0	6.5	7.0
16	6.5	5.5	6.0	---	---	---	6.5	6.0	6.5	8.0	7.0	7.5
17	6.5	5.5	6.5	---	---	---	7.0	5.5	6.5	8.5	7.0	7.5
18	---	---	---	---	---	---	8.0	6.5	7.0	10.0	8.0	9.0
19	---	---	---	---	---	---	8.0	7.0	7.5	11.0	9.0	10.0
20	---	---	---	---	---	---	7.5	7.0	7.0	11.0	10.0	10.5
21	---	---	---	---	---	---	7.0	6.0	6.5	10.5	8.0	9.0
22	6.5	6.0	6.5	---	---	---	6.5	6.0	6.0	8.0	7.5	7.5
23	6.5	6.0	6.0	---	---	---	7.5	6.0	7.0	9.0	7.0	8.0
24	6.5	5.5	5.5	6.5	6.0	6.0	8.5	7.5	8.0	9.5	8.5	9.5
25	6.0	5.0	5.5	6.0	6.0	6.0	9.0	8.5	8.5	9.5	8.5	9.0
26	5.0	4.5	5.0	7.5	6.0	6.5	8.5	7.5	8.0	9.5	8.5	9.0
27	5.0	4.0	4.5	7.5	7.0	7.5	8.0	7.0	7.5	9.0	8.5	9.0
28	4.5	3.0	4.0	7.5	7.0	7.5	8.0	7.0	7.5	10.5	9.0	9.5
29	---	---	---	7.5	6.5	7.5	8.5	7.0	7.5	9.5	8.5	9.0
30	---	---	---	7.5	6.5	7.0	8.0	7.5	8.0	10.5	8.5	9.5
31	---	---	---	6.5	5.5	6.0	---	---	---	11.0	9.5	10.5
MONTH	6.5	3.0	5.0	7.5	3.0	5.5	10.0	5.0	7.0	11.0	6.0	8.5

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	10.5	11.0	13.0	12.0	12.5	17.5	15.0	16.5	14.0	13.0	13.5
2	12.0	11.0	11.5	12.0	11.0	11.5	18.0	15.0	16.5	13.5	12.5	13.0
3	12.0	11.0	11.5	11.0	10.5	11.0	18.5	15.5	17.0	13.0	12.0	12.5
4	12.5	11.0	11.5	10.5	10.0	10.0	18.5	16.0	17.0	12.0	11.5	12.0
5	12.5	10.5	11.5	11.5	10.0	10.5	17.5	15.0	16.5	12.0	11.5	11.5
6	12.0	10.0	11.0	14.0	11.0	12.5	18.0	15.0	16.5	12.0	11.0	11.5
7	11.5	10.0	10.5	14.0	13.0	13.5	18.5	15.0	17.0	12.0	11.0	11.5
8	12.0	10.5	11.5	13.5	13.0	13.5	18.5	15.5	17.0	11.5	11.0	11.0
9	12.0	9.5	11.0	13.5	12.5	13.0	18.5	16.0	17.5	11.5	10.5	11.0
10	10.0	9.0	9.5	12.5	11.0	12.0	17.5	15.0	16.5	11.0	10.5	10.5
11	11.0	9.5	10.0	12.0	11.0	11.5	16.5	15.0	15.5	11.0	10.5	10.5
12	11.0	10.5	11.0	14.5	11.0	12.5	15.5	14.0	14.5	12.5	10.5	11.5
13	10.5	10.0	10.5	16.0	13.0	14.5	15.0	13.5	14.0	12.0	11.0	11.5
14	10.0	9.5	10.0	15.0	14.0	14.5	14.0	12.5	13.0	11.5	10.5	11.0
15	10.5	9.5	10.0	15.0	13.5	14.0	13.5	12.5	13.0	12.0	11.0	11.5
16	10.5	10.0	10.0	14.0	12.0	13.0	14.5	12.5	13.5	12.0	10.5	11.0
17	12.5	9.5	11.0	13.0	11.0	12.0	14.0	12.0	13.0	11.0	10.0	10.5
18	13.0	12.0	12.5	14.5	12.0	13.0	15.0	12.5	14.0	10.5	9.0	10.0
19	13.5	11.5	12.5	16.0	13.5	14.5	15.0	14.0	14.5	11.0	9.0	10.0
20	13.5	12.5	13.0	15.0	13.5	14.5	14.0	13.0	13.5	11.0	9.5	10.0
21	13.5	11.5	12.5	16.5	14.0	15.5	13.5	12.5	13.0	11.0	9.5	10.5
22	13.5	12.0	12.5	17.0	14.5	16.0	13.5	13.0	13.5	11.0	10.5	10.5
23	13.0	11.5	12.0	17.5	15.5	16.5	13.0	12.0	12.5	10.5	10.0	10.5
24	11.5	10.0	11.0	17.0	15.0	16.5	12.5	11.5	12.0	11.0	9.5	10.0
25	10.5	9.5	10.0	17.5	15.0	16.5	13.0	11.5	12.0	12.0	11.0	11.5
26	13.0	9.5	11.0	17.0	15.0	16.0	14.0	11.5	13.0	13.0	11.5	12.0
27	14.0	12.5	13.5	16.0	14.0	15.0	15.0	12.5	13.5	13.5	12.5	13.0
28	14.5	13.5	14.0	17.0	15.0	16.0	15.5	13.0	15.0	12.5	11.0	11.5
29	13.5	11.5	12.5	18.0	15.0	16.5	16.5	14.0	15.5	12.0	10.5	11.0
30	12.5	11.0	11.5	18.0	15.0	16.5	16.5	15.0	15.5	12.0	11.5	11.5
31	---	---	---	17.5	15.0	16.5	15.5	13.5	14.5	---	---	---
MONTH	14.5	9.0	11.5	18.0	10.0	14.0	18.5	11.5	14.5	14.0	9.0	11.5
YEAR	18.5	1.0	9.0									

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi (4.5 km) east of Mossyrock and at mile 65.5 (105.4 km).

DRAINAGE AREA.--1,154 mi² (2,989 km²).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REVISED RECORDS.--WRD Wash. 1974: 1973.

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Usable capacity, 1,297,400 acre-ft (1,600 hm³) between elevations 600 ft (182.9 m), minimum operating level, and 770 ft (234.7 m), normal operating pool Dead storage below elevation 600 ft (182.9 m), 288,900 acre-ft (356 hm³). Crest of spillway is at elevation 728.5 ft (222.05 m). Water used by city of Tacoma for power development. Elevation records collected in cooperation with city of Tacoma. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents 1,686,300 acre-ft (2,080 hm³) July 31, 1972, elevation, 778.63 ft (237.326 m); minimum since normal low operating level was attained, 658,503 acre-ft (812 hm³) Mar. 17, 1977, elevation, 666.88 ft (203.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,683,219 acre-ft (2,080 hm³) June 21, elevation, 778.37 ft (237.247 m); minimum, 1,089,645 acre-ft (1,340 hm³) Mar. 17, elevation, 720.54 ft (219.621 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	763.00	1,508,678	------
Oct. 31	761.64	1,493,938	-14,740
Nov. 30	756.37	1,437,828	-56,110
Dec. 31	748.17	1,353,384	-84,444
CAL YR 1977	-----	-----	+429,390
Jan. 31	731.31	1,189,020	-164,364
Feb. 29	724.82	1,128,647	-60,373
Mar. 31	728.35	1,161,303	+32,656
Apr. 30	744.74	1,318,975	+157,672
May 31	769.09	1,576,027	+257,052
June 30	777.39	1,671,667	+95,640
July 31	776.96	1,666,614	-5,053
Aug. 31	775.32	1,647,436	-19,178
Sept. 30	775.90	1,654,202	+6,766
WTR YR 1978	-----	-----	+145,524

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Descriptive location given is for lake outlet. Samples taken elsewhere within lake body.

WATER QUALITY DATA

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)
NOV . 1977							
09...	1335	1.0	48	7.4	11.8	1	9.8
09...	1340	20	47	7.4	11.8	1	9.9
09...	1345	50	48	7.4	11.8	1	9.8
09...	1350	100	48	7.3	11.8	1	9.8
09...	1355	200	49	7.2	9.8	1	9.1
09...	1400	300	52	7.1	7.9	1	8.8
DEC							
06...	1030	1.0	43	7.4	7.7	8	10.9
06...	1040	20	43	7.4	7.7	15	11.1
06...	1050	50	42	7.6	7.7	10	10.8
06...	1100	100	42	7.5	7.7	20	10.8
06...	1110	200	36	7.4	7.6	120	11.0
06...	1120	300	34	7.4	7.5	140	11.1
JAN . 1978							
10...	1115	1.0	43	7.2	6.1	20	11.4
10...	1130	20	43	7.3	5.8	20	11.5
10...	1140	50	42	7.4	5.8	15	11.5
10...	1150	100	43	7.4	5.8	20	11.5
10...	1205	200	43	7.4	5.8	20	11.5
10...	1220	300	42	7.5	5.8	20	11.6
FEB							
08...	0940	1.0	42	7.4	5.6	10	11.2
08...	1000	20	42	7.4	5.6	10	11.6
08...	1020	50	42	7.5	5.6	10	11.7
08...	1040	100	44	7.4	5.6	10	11.7
08...	1110	200	42	7.3	5.6	10	11.5
08...	1130	300	42	7.3	5.6	10	11.7
MAR							
07...	1045	1.0	45	7.0	5.4	9	11.7
07...	1055	20	45	7.0	5.3	10	11.7
07...	1105	50	45	7.0	5.3	9	11.7
07...	1115	100	45	7.1	5.3	10	11.7
07...	1125	200	45	7.0	5.3	10	11.8
07...	1135	300	45	7.2	5.3	9	11.7

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV . 1977							
09...	70	<1	.01	.02	.08	.01	.00
09...	48	<1	.01	.02	.07	.01	.00
09...	47	<1	.01	.02	.13	.01	.00
09...	60	<1	.01	.02	.08	.01	.00
09...	K110	3	.06	.03	.09	.01	.00
09...	540	<1	.12	.02	.07	.01	.00
DEC							
06...	440	K5	.10	.04	.09	.04	.01
06...	240	K3	.10	.03	.06	.04	.00
06...	260	K3	.09	.03	.07	.05	.01
06...	360	K17	.09	.05	.10	.07	.00
06...	K300	K60	.08	.13	.31	.22	.00
06...	K82	K65	.10	.15	.35	.28	.04
JAN . 1978							
10...	--	--	.12	.06	.09	.04	.01
10...	--	--	.15	.05	.08	.05	.01
10...	--	--	.12	.06	.09	.04	.01
10...	--	--	.12	.05	.08	.04	.01
10...	--	--	.12	.06	.08	.05	.01
10...	--	--	.13	.06	.12	.04	.01
FEB							
08...	K22	<2	.13	.05	.08	.04	.01
08...	K6	<2	.13	.04	.07	.04	.01
08...	K6	<2	.13	.05	.06	.04	.01
08...	K3	K2	.13	.05	.05	.04	.01
08...	K11	<2	.13	.05	.07	.04	.01
08...	K11	<2	.13	.04	.07	.05	.01
MAR							
07...	K3	<1	.13	.01	.06	.03	.00
07...	K2	<1	.13	.02	.06	.03	.00
07...	K3	<2	.14	.02	.06	.03	.01
07...	<1	<1	.13	.02	.06	.03	.01
07...	<1	<1	.13	.02	.07	.04	.00
07...	<1	<1	.13	.02	.06	.03	.00

K Results based upon colony counts outside the ideal range.

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)
APR , 1978							
04...	1050	1.0	49	7.5	7.8	4	11.7
04...	1110	20	49	7.4	7.5	3	11.6
04...	1120	50	48	7.4	7.4	4	11.6
04...	1140	100	49	7.4	7.3	3	11.5
04...	1200	200	47	7.4	5.5	7	11.5
04...	1220	300	50	7.4	5.3	5	11.5
MAY							
02...	1030	1.0	50	7.6	8.8	1	11.7
02...	1040	20	50	7.6	8.3	2	11.5
02...	1050	50	50	7.5	7.9	2	11.4
02...	1100	100	51	7.4	7.4	1	11.4
02...	1110	200	51	7.4	5.8	4	11.4
02...	1120	300	52	7.4	5.6	5	11.3
JUN							
13...	1020	1.0	45	7.6	15.8	0	10.2
13...	1035	20	44	7.6	14.2	0	10.7
13...	1100	50	47	7.6	11.2	0	10.7
13...	1110	100	48	7.5	9.2	0	10.6
13...	1125	200	50	7.6	7.4	1	11.0
13...	1140	300	52	7.4	6.3	2	10.5
JUL							
18...	1050	1.0	45	7.6	16.8	0	9.7
18...	1100	20	44	7.6	16.4	1	9.6
18...	1110	50	42	7.4	15.0	1	9.6
18...	1120	100	45	7.4	11.2	0	10.0
18...	1125	200	49	7.3	8.2	1	10.0
18...	1135	300	49	7.2	7.0	2	9.9
AUG							
15...	1005	1.0	43	7.6	19.0	1	9.0
15...	1015	20	40	7.8	19.2	1	8.8
15...	1025	50	41	7.7	17.0	1	9.0
15...	1035	100	39	7.5	12.0	1	9.7
15...	1045	200	45	7.4	8.8	1	10.2
15...	1055	300	51	7.4	7.5	1	9.6

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
APR , 1978							
04...	K4	<2	.11	.05	.09	.02	.01
04...	K6	<2	.09	.05	.10	.02	.00
04...	K6	<2	.08	.05	.12	.02	.00
04...	K4	2	.08	.04	.13	.02	.00
04...	K4	<2	.11	.05	.09	.03	.00
04...	K10	<2	.12	.05	.12	.03	.00
MAY							
02...	K26	<1	.03	.03	.11	.01	.00
02...	K2	<1	.05	.03	.08	.01	.01
02...	13	<1	.05	.03	.06	.01	.01
02...	K10	<1	.05	.04	.06	.01	.01
02...	K12	<1	.10	.05	.06	.02	.01
02...	K3	<1	.10	.05	.06	.58	.01
JUN							
13...	2	1	.00	.03	.06	.01	.00
13...	25	<1	.00	.04	.13	.01	.01
13...	K3	<1	.01	.03	.11	.01	.00
13...	1	<1	.04	.01	.08	.01	.00
13...	3	<1	.06	.01	.06	.01	.00
13...	11	<1	.09	.03	.06	.02	.01
JUL							
18...	1	<1	.00	.02	.05	.00	.00
18...	3	1	.00	.02	.15	.01	.00
18...	10	<1	.00	.03	.12	.00	.00
18...	10	<1	.03	.02	.05	.00	.00
18...	14	<1	.06	.01	.05	.00	.00
18...	17	<1	.11	.02	.11	.01	.00
AUG							
15...	4	<1	.01	.02	.04	.01	.00
15...	5	<1	.01	.02	.10	.01	.00
15...	<10	<1	.01	.02	.14	.01	.00
15...	1	<1	.04	.02	.08	.01	.00
15...	K470	<1	.08	.02	.07	.01	.00
15...	760	<1	.12	.02	.11	.01	.01

K Results based upon colony counts outside the ideal range.

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
SEP , 1978							
13...	0930	1.0	47	6.8	17.5	0	9.2
13...	0935	20	46	7.0	17.5	0	9.1
13...	0940	50	48	7.0	17.3	0	9.0
13...	0945	100	46	6.8	12.8	1	8.8
13...	0955	200	53	7.9	9.2	1	11.4
13...	1000	300	51	7.8	7.4	1	9.0

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
SEP , 1978							
13...	6500	1	.00	.01	.12	.01	.00
13...	K8500	<1	.00	.01	.12	.00	.00
13...	K8400	1	.01	.01	.07	.00	.00
13...	2100	<1	.03	.02	.04	.01	.00
13...	K600	<1	.07	.02	.07	.01	.00
13...	3100	<1	.13	.01	.05	.01	.00

K Results based upon colony counts outside the ideal range.

14234805 MOSSYROCK POWERPLANT TAILWATER NEAR MOSSYROCK, WA

LOCATION.--Lat 46°30'15", long 122°35'12", in SW¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005.

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
NOV , 1977									
09...	1530	48	7.0	9.4	2	9.2	10	2	.07
DEC									
06...	1230	40	7.6	7.7	50	12.9	K300	K43	.08
JAN , 1978									
10...	1325	41	7.4	6.0	20	11.6	--	--	.12
FEB									
08...	1405	43	7.3	5.6	10	11.6	K11	<2	.15
MAR									
07...	1200	46	7.2	5.4	10	11.8	K4	<1	.13
APR									
04...	1310	49	7.4	6.4	4	11.6	K4	<2	.10
MAY									
02...	1235	52	7.4	6.0	4	11.5	K3	<1	.09
JUN									
13...	1220	52	7.2	7.8	1	10.9	21	<1	.08
JUL									
18...	1210	50	7.0	8.1	1	10.4	24	<1	.08
AUG									
15...	1130	45	7.4	8.6	1	10.0	<1	<1	.09
SEP									
13...	1110	48	8.0	9.4	1	9.9	K1500	<1	.08

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1977								
09...	.03	.01	.04	.11	.50	.01	.00	.00
DEC								
06...	.07	.11	.18	.26	1.2	.11	.01	.03
JAN , 1978								
10...	.07	.04	.11	.23	1.0	.04	.01	.03
FEB								
08...	.06	.05	.11	.26	1.2	.04	.01	.03
MAR								
07...	.02	.06	.08	.21	.90	.03	.00	.00
APR								
04...	.05	.11	.16	.26	1.2	.08	.06	.18
MAY								
02...	.05	.03	.08	.17	.80	.02	.01	.03
JUN								
13...	.03	.03	.06	.14	.60	.05	.05	.15
JUL								
18...	.01	.03	.04	.12	.50	.01	.00	.00
AUG								
15...	.02	.07	.09	.18	.80	.01	.00	.00
SEP								
13...	.01	.07	.08	.16	.70	.01	.01	.03

K Results based upon colony counts outside the ideal range.

14234810 COWLITZ RIVER BELOW MOSSYROCK DAM, WA

LOCATION.--Lat 46°32'10", long 122°25'45", in SE¼SE¼ in sec.9, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on left bank 0.2 mi (0.3 km) downstream from Mossyrock Dam and 2.6 mi (4.2 km) east from town of Mossyrock.

DRAINAGE AREA.--1,154 mi² (2,989 km²) at Mossyrock Dam.

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1970 to current year.

INSTRUMENTATION.--Temperature recorder since July 1970.

REMARKS.--High temperatures during period June 8-13, result of no outflow from Mossyrock Dam, probe in backwater from Mayfield Dam.

EXTREMES OR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C June 11, 1978 (no outflow from dam); minimum, 3.5°C Feb. 9, 10, 25, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 15.0°C on June 11 (no outflow from dam); minimum recorded, 5.5°C many days during period January to April.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.5	8.5	8.5	8.5	8.5	8.5	8.0	7.5	8.0	6.5	6.0	6.0
2	8.5	8.5	8.5	9.0	8.5	8.5	8.0	7.5	7.5	6.0	6.0	6.0
3	8.5	8.5	8.5	9.5	9.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0
4	8.5	8.5	8.5	9.0	9.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0
5	8.5	8.0	8.5	9.0	9.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0
6	8.5	8.0	8.5	9.0	9.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0
7	8.5	8.5	8.5	9.5	9.0	9.0	7.5	7.5	7.5	6.0	6.0	6.0
8	8.5	8.0	8.5	9.5	9.0	9.5	7.5	7.5	7.5	6.0	6.0	6.0
9	8.5	8.0	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
10	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
11	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
12	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
13	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
14	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.5	7.5	6.0	6.0	6.0
15	8.5	8.5	8.5	9.5	9.5	9.5	7.5	7.0	7.5	6.0	6.0	6.0
16	8.5	8.5	8.5	9.5	9.5	9.5	7.0	7.0	7.0	6.0	6.0	6.0
17	8.5	8.5	8.5	9.5	9.5	9.5	7.0	6.5	7.0	6.0	6.0	6.0
18	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.5	6.0	6.0
19	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
20	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
21	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
22	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
23	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
24	9.0	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	6.0	6.0	6.0
25	8.5	8.5	8.5	9.5	9.5	9.5	6.5	6.5	6.5	5.5	5.5	5.5
26	8.5	8.5	8.5	9.5	8.5	8.5	6.5	6.5	6.5	5.5	5.5	5.5
27	8.5	8.5	8.5	8.5	8.0	8.5	6.5	6.5	6.5	5.5	5.5	5.5
28	8.5	8.5	8.5	8.0	8.0	8.0	6.5	6.5	6.5	5.5	5.5	5.5
29	8.5	8.5	8.5	8.0	8.0	8.0	6.5	6.5	6.5	5.5	5.5	5.5
30	8.5	8.5	8.5	8.0	8.0	8.0	6.5	6.5	6.5	5.5	5.5	5.5
31	9.0	8.5	8.5	---	---	---	6.5	6.5	6.5	5.5	5.5	5.5
MONTH	9.0	8.0	8.5	9.5	8.0	9.0	8.0	6.5	7.0	6.5	5.5	6.0

14234810 COWLITZ RIVER BELOW MOSSYROCK DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0
2	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
3	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.0
4	5.5	5.5	5.5	5.5	5.5	5.5	6.5	6.0	6.0	6.5	6.0	6.0
5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
6	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5
7	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5
8	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.5
9	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.0
10	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
11	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
12	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
13	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
14	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
15	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
16	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5
17	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	7.0	6.5	7.0
18	5.5	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	7.0	6.5	7.0
19	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.0	6.5	6.5	6.5
20	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	7.5	6.5	7.0
21	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	7.5	6.5	7.0
22	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0
23	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0
24	5.5	5.5	5.5	6.0	5.5	5.5	7.0	6.0	6.5	7.0	6.5	6.5
25	5.5	5.5	5.5	6.0	5.5	6.0	7.0	6.0	6.5	6.5	6.5	6.5
26	5.5	5.5	5.5	6.5	6.0	6.0	6.5	6.0	6.0	6.5	6.5	6.5
27	5.5	5.5	5.5	6.5	5.5	6.0	6.5	6.0	6.0	7.0	6.5	6.5
28	5.5	5.5	5.5	5.5	5.5	5.5	6.5	6.5	6.5	6.5	6.5	6.5
29	---	---	---	5.5	5.5	5.5	7.0	6.5	6.5	7.0	6.5	7.0
30	---	---	---	5.5	5.5	5.5	6.5	6.0	6.5	7.0	7.0	7.0
31	---	---	---	5.5	5.5	5.5	---	---	---	7.0	6.5	7.0
MONTH	5.5	5.5	5.5	6.5	5.5	5.5	7.0	5.5	6.0	7.5	6.0	6.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.0	6.5	6.5	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
2	7.0	6.5	7.0	7.5	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
3	7.0	7.0	7.0	7.5	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
4	7.0	7.0	7.0	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
5	7.0	7.0	7.0	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
6	7.0	7.0	7.0	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
7	7.0	7.0	7.0	7.5	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
8	12.5	7.0	9.5	8.0	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
9	12.0	11.5	11.5	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
10	13.0	12.0	12.5	8.0	7.5	7.5	8.0	8.0	8.0	9.0	8.5	8.5
11	15.0	13.0	14.0	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
12	14.5	11.5	12.5	8.0	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
13	9.5	7.0	7.5	8.0	7.5	7.5	8.5	8.0	8.0	8.5	8.5	8.5
14	7.0	7.0	7.0	8.5	7.5	8.0	8.0	8.0	8.0	8.5	8.5	8.5
15	7.0	7.0	7.0	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5
16	7.0	7.0	7.0	8.0	7.5	8.0	8.5	8.0	8.5	8.5	8.5	8.5
17	7.0	7.0	7.0	7.5	7.5	7.5	8.5	8.0	8.5	8.5	8.5	8.5
18	8.0	7.0	7.0	8.0	7.5	8.0	8.5	8.0	8.5	8.5	8.5	8.5
19	7.5	7.0	7.5	8.0	7.5	8.0	8.0	8.0	8.0	9.0	8.5	8.5
20	7.5	7.0	7.0	8.0	7.5	8.0	8.0	8.0	8.0	8.5	8.5	8.5
21	7.5	7.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5
22	7.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5
23	7.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.5
24	7.5	7.0	7.0	8.0	8.0	8.0	8.5	8.0	8.5	9.0	8.5	8.5
25	7.5	7.0	7.0	8.0	8.0	8.0	8.5	8.5	8.5	9.0	8.5	8.5
26	7.5	7.0	7.0	8.0	8.0	8.0	8.5	8.0	8.5	8.5	8.5	8.5
27	7.5	7.0	7.5	8.0	8.0	8.0	8.5	8.0	8.0	8.5	8.5	8.5
28	7.5	7.0	7.5	8.0	8.0	8.0	8.5	8.5	8.5	8.5	8.5	8.5
29	7.5	7.5	7.5	8.0	8.0	8.0	8.5	8.5	8.5	9.0	8.5	9.0
30	7.5	7.5	7.5	8.5	8.0	8.0	8.5	8.0	8.5	9.0	9.0	9.0
31	---	---	---	8.0	8.0	8.0	8.5	8.0	8.5	---	---	---
MONTH	15.0	6.5	8.0	8.5	7.5	8.0	8.5	8.0	8.0	9.0	8.5	8.5
YEAR	15.0	5.5	7.0									

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'30", in NE¼SW¼ sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi (1.4 km) upstream from Bear Canyon Creek, 3.5 mi (5.6 km) southeast of Cinebar, and at mile 7.1 (11.4 km).

DRAINAGE AREA.--141 mi² (365 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WRD Wash. 1972: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Water-discharge records excellent. Several small diversions for municipal and domestic use above station. No regulation.

AVERAGE DISCHARGE.--22 years, 857 ft³/s (24.27 m³/s) 82.54 in/yr (2,097 mm/yr), 620,900 acre-ft/yr (766 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) Dec. 2, 1977, gage height, 17.00 ft (5.182 m), from rating curve extended above 10,500 ft³/s (297 m³/s) on basis of slope-area measurement at gage height of 14.79 ft (4.508 m); minimum, 52 ft³/s (1.47 m³/s), Sept. 27-29, 1967; minimum gage height, 1.96 ft (0.597 m) Aug. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,200 ft³/s (176 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2245	6,830	193	8.87	2.704
Nov. 25	1930	8,800	249	10.06	3.066
Dec. 2	1230	*22,500	637	*17.00	5.182
Dec. 13	1730	10,300	292	10.96	3.341

Minimum discharge, 83 ft³/s (2.35 m³/s) Aug. 9, 10, gage height, 2.41 ft (0.735 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	357	3080	4520	595	754	585	426	712	423	204	102	284
2	321	4130	17100	555	1480	535	465	635	389	199	101	306
3	292	1930	8510	802	1710	515	510	575	360	196	99	263
4	267	1250	4900	1770	1400	515	515	545	334	195	95	266
5	245	929	2990	1550	1210	480	590	505	312	190	93	277
6	235	763	4060	1510	1170	455	560	460	293	183	90	260
7	280	1140	3940	1320	1090	555	515	422	281	172	88	236
8	246	899	2570	1850	1190	802	475	395	269	166	86	228
9	234	868	1910	1980	1090	658	440	372	330	164	84	350
10	218	2430	2510	1630	932	580	417	368	385	167	86	556
11	206	1880	4900	1340	814	545	399	615	412	166	107	513
12	196	1400	4680	1330	730	525	372	625	359	159	131	420
13	200	1810	7450	1270	652	525	363	862	412	150	109	364
14	187	3270	6610	1250	615	495	381	1650	492	144	187	323
15	177	3050	4720	1110	605	460	395	1760	584	143	230	298
16	169	2540	3420	981	550	440	555	1300	528	214	171	270
17	163	1920	2420	911	525	426	670	1020	463	198	144	314
18	158	1480	1880	820	520	413	772	849	409	169	146	277
19	153	1160	1530	784	545	395	946	729	368	154	150	252
20	149	949	1260	718	550	372	1090	640	336	144	145	235
21	148	809	1090	995	535	359	1050	578	312	136	148	236
22	145	723	960	1200	510	346	1340	557	298	129	163	388
23	168	725	862	1000	485	377	1550	513	279	123	155	899
24	195	846	834	862	475	440	1390	469	265	119	201	831
25	388	5130	862	796	570	995	1360	443	258	117	216	593
26	537	5640	908	814	778	953	1310	447	248	115	197	465
27	400	3790	742	736	712	718	1260	589	233	119	171	385
28	334	4270	688	706	640	635	1120	659	219	114	154	338
29	523	4230	730	664	---	560	946	578	214	110	142	302
30	1440	2740	706	620	---	510	808	516	214	106	134	287
31	1410	---	646	640	---	460	---	466	---	104	155	---
TOTAL	10141	65781	100[illegible]	33109	22837	16629	22990	20854	10279	4769	4280	11016
MEAN	327	2193	3252	1068	816	536	766	673	343	154	138	367
MAX	1440	5640	17100	1980	1710	995	1550	1760	584	214	230	899
MIN	145	723	646	555	475	346	363	368	214	104	84	228
CFSM	2.32	15.6	23.1	7.57	5.79	3.80	5.43	4.77	2.43	1.09	.98	2.60
IN.	2.68	17.35	26.60	8.74	6.03	4.39	6.07	5.50	2.71	1.26	1.13	2.91
AC-FT	20110	130500	200000	65670	45300	32980	45600	41360	20390	9460	8490	21850

CAL YR 1977 TOTAL 321262 MEAN 880 MAX 17100 MIN 68 CFSM 6.24 IN 84.76 AC-FT 637200
WTR YR 1978 TOTAL 323493 MEAN 886 MAX 17100 MIN 84 CFSM 6.28 IN 85.35 AC-FT 641600

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1965 to current year.

INSTRUMENTATION.--Temperature recorder since May 1965.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.5°C July 30, 1965; minimum, 0.5°C Feb. 2, 1972, Jan. 5-9, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 23.5°C Aug. 8; minimum, 2.0°C Nov. 21, Jan. 1, 2.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.0	9.5	10.5	9.0	7.5	8.0	8.0	6.5	7.0	2.5	2.0	2.0
2	11.0	8.5	9.5	8.0	7.0	7.5	8.5	8.0	8.0	3.0	2.0	2.5
3	10.5	7.5	9.0	7.0	6.5	7.0	8.0	7.0	7.5	3.5	3.0	3.5
4	10.0	8.0	9.0	7.0	6.5	7.0	7.0	6.5	6.5	5.0	3.5	4.5
5	10.5	8.0	9.5	7.5	6.5	7.0	6.5	6.0	6.5	5.0	5.0	5.0
6	9.0	8.5	8.5	7.5	7.0	7.5	7.0	6.5	6.5	5.0	4.5	4.5
7	11.0	9.0	10.0	7.5	6.5	7.0	6.5	5.5	5.5	5.5	4.5	5.0
8	10.5	9.5	10.0	6.0	5.0	6.0	5.5	5.0	5.0	6.0	5.5	6.0
9	11.0	9.0	10.0	7.0	6.0	6.5	5.5	5.0	5.5	6.5	6.0	6.0
10	11.0	8.5	9.5	8.0	7.0	7.5	6.5	5.5	6.0	6.5	6.0	6.0
11	11.0	8.0	9.5	8.0	7.5	8.0	7.5	6.5	7.0	6.0	6.0	6.0
12	10.5	8.5	9.5	8.0	7.5	7.5	7.0	7.0	7.0	6.5	6.0	6.0
13	11.5	9.5	10.5	7.5	7.5	7.5	8.0	7.0	7.5	6.5	5.5	6.0
14	11.0	8.0	9.5	7.5	7.0	7.5	8.0	8.0	8.0	6.5	6.5	6.5
15	11.5	9.0	10.0	8.0	7.0	7.5	7.5	6.0	7.0	6.5	6.0	6.0
16	12.0	10.0	10.5	7.0	6.5	7.0	6.5	6.0	6.5	6.0	5.5	5.5
17	11.0	8.0	9.5	6.5	5.5	6.0	6.5	6.0	6.5	6.0	5.5	6.0
18	10.5	8.0	9.0	5.5	4.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
19	10.5	8.5	9.0	4.5	4.0	4.5	6.0	5.5	5.5	6.5	6.0	6.0
20	10.0	7.5	8.5	4.0	2.5	3.0	5.0	4.5	5.0	6.5	6.0	6.5
21	10.0	8.5	9.0	2.5	2.0	2.5	5.0	4.5	5.0	6.5	6.0	6.5
22	10.5	9.0	9.5	3.5	2.5	3.0	5.0	5.0	5.0	6.0	5.0	5.0
23	11.5	9.5	10.5	4.5	4.0	4.0	5.0	4.5	4.5	5.5	4.5	5.0
24	10.0	9.5	9.5	5.5	4.5	5.0	6.0	5.0	5.5	4.5	4.0	4.5
25	9.5	9.0	9.5	7.5	5.5	6.0	6.5	6.0	6.0	6.0	4.5	5.0
26	9.5	8.0	8.5	7.5	7.0	7.0	6.0	4.5	5.0	6.0	5.0	5.5
27	8.5	7.5	8.0	7.0	7.0	7.0	4.0	3.5	3.5	5.5	4.5	5.0
28	8.5	7.5	8.0	7.0	7.0	7.0	5.0	3.5	4.5	6.0	5.5	6.0
29	8.5	8.5	8.5	7.5	6.5	7.0	5.5	5.0	5.5	6.5	5.5	6.0
30	8.5	7.5	8.0	6.5	6.0	6.0	5.5	5.0	5.5	5.5	4.5	5.0
31	8.0	7.5	7.5	---	---	---	4.5	2.5	3.5	5.5	5.0	5.0
MONTH	12.0	7.5	9.5	9.0	2.0	6.5	8.5	2.5	6.0	6.5	2.0	5.5

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.0	5.0	6.5	4.5	5.5	9.0	8.0	8.5	9.5	7.5	8.5
2	6.0	5.5	5.5	6.5	3.5	5.0	8.0	7.0	7.5	10.5	8.0	9.0
3	7.0	6.0	6.5	4.5	4.0	4.0	10.5	7.0	8.5	10.0	8.0	9.0
4	7.5	6.5	7.0	5.5	4.0	4.5	8.5	7.5	8.0	9.0	7.5	8.0
5	7.0	6.5	6.5	6.5	5.0	6.0	8.0	6.5	7.0	10.5	6.5	8.0
6	7.0	6.5	6.5	6.5	5.5	6.0	8.5	5.5	7.0	12.0	6.5	9.0
7	6.5	6.5	6.5	7.0	6.0	6.5	9.5	6.5	8.0	12.5	7.5	10.0
8	6.5	6.0	6.0	8.0	6.0	7.0	10.0	7.0	8.0	13.5	8.5	11.0
9	6.0	5.0	5.5	8.0	6.5	7.0	11.0	6.5	8.5	11.5	9.5	10.0
10	5.5	4.5	5.0	7.5	5.5	6.5	11.5	8.0	9.5	9.5	8.5	9.0
11	5.0	4.0	4.5	7.0	6.5	6.5	9.5	7.5	8.5	9.5	8.0	8.5
12	4.0	3.5	4.0	6.5	6.0	6.5	11.0	6.0	8.5	9.0	8.0	8.5
13	5.5	4.0	4.5	6.5	6.0	6.0	8.5	7.5	8.0	9.0	8.0	8.5
14	5.5	5.0	5.0	7.5	5.5	6.5	8.5	7.0	7.5	8.5	7.5	8.0
15	5.5	5.0	5.0	7.5	5.0	6.5	9.5	7.5	8.5	9.5	7.0	8.0
16	5.5	4.5	5.0	8.5	5.5	7.0	7.5	6.0	6.5	9.0	7.5	8.0
17	6.0	5.5	5.5	9.5	6.0	8.0	7.0	6.0	6.5	10.5	7.5	8.5
18	6.5	6.0	6.0	10.0	6.0	8.0	8.5	6.5	7.5	12.5	7.0	10.0
19	8.0	6.0	7.0	10.0	6.5	8.0	8.5	7.0	7.5	14.0	9.0	11.5
20	8.0	6.0	7.0	10.5	7.0	8.5	8.0	6.5	7.0	15.0	10.0	12.5
21	8.5	7.0	7.5	11.0	7.5	9.0	7.0	6.0	6.5	12.5	9.5	10.5
22	8.0	6.0	7.0	11.0	8.0	9.5	6.5	6.0	6.0	10.5	8.5	9.5
23	7.5	7.0	7.0	10.0	8.5	9.0	9.0	6.0	7.5	11.5	8.0	9.5
24	7.0	7.0	7.0	8.5	8.0	8.0	9.5	7.0	8.5	11.5	8.5	10.0
25	7.0	6.5	6.5	8.0	7.5	8.0	9.0	7.5	8.5	10.5	8.5	9.5
26	7.0	6.5	6.5	10.0	7.5	8.5	8.5	8.0	8.0	10.0	9.0	9.5
27	6.5	5.5	6.0	9.5	8.0	8.5	9.0	7.5	8.0	10.0	9.0	9.5
28	6.0	5.5	6.0	10.0	8.5	9.0	9.0	8.0	8.5	11.5	8.5	10.0
29	---	---	---	11.0	8.5	9.5	10.5	6.5	8.5	11.0	8.5	10.0
30	---	---	---	9.5	8.0	9.0	9.5	7.5	8.5	13.5	8.0	10.5
31	---	---	---	10.5	7.0	8.5	---	---	---	14.5	9.0	11.5
MONTH	8.5	3.5	6.0	11.0	3.5	7.5	11.5	5.5	8.0	15.0	6.5	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.0	10.0	13.0	18.0	13.5	15.5	18.5	15.0	16.5	14.5	14.0	14.0
2	16.5	11.0	14.0	15.0	13.5	14.0	21.0	15.5	17.5	15.5	13.5	14.0
3	18.0	12.0	15.0	13.5	12.5	13.0	21.5	16.0	18.5	14.5	13.5	14.0
4	18.5	12.5	15.5	13.0	11.5	12.0	21.5	16.0	18.5	14.0	12.5	13.0
5	19.0	13.0	16.0	14.0	11.5	12.5	21.5	14.5	18.0	14.0	12.5	13.0
6	16.0	12.5	14.5	18.5	12.0	15.0	22.0	14.5	18.0	14.5	12.5	13.0
7	16.5	12.5	14.0	17.0	13.5	15.0	23.0	15.0	19.0	14.0	11.5	12.5
8	17.5	11.5	14.5	16.0	14.0	15.0	23.5	16.0	19.5	12.5	11.5	12.5
9	14.5	12.0	13.0	15.5	13.5	14.0	23.0	16.5	19.5	12.5	12.0	12.0
10	13.0	11.0	12.0	14.0	12.5	13.0	18.0	15.0	16.5	12.5	11.5	12.0
11	15.5	11.0	13.0	15.0	12.5	13.5	16.0	15.0	15.5	13.0	11.0	12.0
12	13.0	11.5	12.5	19.5	12.0	15.5	17.0	14.5	15.5	14.5	11.0	12.5
13	13.0	11.0	12.0	20.5	13.5	17.0	17.5	14.0	16.0	12.0	11.5	11.5
14	11.5	10.5	11.0	20.0	14.0	17.0	16.0	14.0	15.0	13.0	11.5	12.5
15	12.5	10.0	11.0	16.5	14.5	15.5	15.5	14.0	14.5	13.5	12.0	12.5
16	12.0	10.0	11.0	14.5	13.5	14.0	16.0	13.5	14.5	14.0	10.5	12.0
17	16.0	9.5	12.5	15.0	12.5	13.5	16.5	13.5	14.5	12.5	10.5	11.0
18	15.5	11.0	13.5	17.0	13.0	14.5	16.0	14.0	15.0	12.0	9.5	11.0
19	17.0	11.5	14.0	20.0	13.5	16.5	15.5	14.0	14.5	13.5	10.0	11.5
20	17.5	12.0	14.5	21.0	14.0	17.5	15.0	13.5	14.5	11.5	10.5	11.0
21	15.0	12.5	13.0	22.0	14.5	18.0	17.5	13.5	15.0	12.0	11.0	11.5
22	16.0	11.5	13.5	22.5	15.0	19.0	15.0	13.5	14.5	11.5	11.0	11.5
23	15.0	12.0	13.5	22.5	16.0	19.0	14.0	12.5	13.5	11.5	10.5	11.0
24	13.0	12.0	12.5	22.0	15.0	18.5	14.5	13.0	13.5	13.0	10.0	11.5
25	13.0	11.5	12.0	22.5	15.5	19.0	15.0	12.5	14.0	14.0	11.0	12.5
26	17.5	11.0	14.0	18.5	16.0	17.0	17.5	12.5	14.5	14.0	11.5	13.0
27	19.0	12.5	15.5	19.0	15.0	16.5	17.0	13.0	15.0	13.5	12.0	13.0
28	20.5	13.5	17.0	20.5	14.5	17.5	19.0	13.5	16.0	12.5	11.5	12.0
29	17.5	13.5	15.0	22.0	14.5	18.0	19.5	14.0	16.5	14.0	11.0	12.5
30	17.0	13.0	14.5	22.0	14.5	18.0	16.5	15.0	15.5	13.0	11.5	12.0
31	---	---	---	21.0	15.0	17.5	15.5	14.5	15.0	---	---	---
MONTH	20.5	9.5	13.5	22.5	11.5	16.0	23.5	12.5	16.0	15.5	9.5	12.5
YEAR	23.5	2.0	9.5									

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River 0.3 mi (0.5 km) downstream from Silver Creek, 4 mi (6.4 km) south of town of Silver Creek, and at mi 52.0 (83.7 km).

DRAINAGE AREA.--1,392 mi^2 (3,605 km^2).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft (26.4 hm^3) between elevation 415 ft (126.5 m), lower limit of operation, and 425 ft (129.5 m), top of taintor gates. Dead storage below elevation 415 ft (126.5 m), 112,340 acre-ft (139 hm^3). Crest of spillway is at elevation 385 ft (117.3 m). Water is used by city of Tacoma for power development. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft (166 hm^3) Dec. 9, 1971, elevation, 425.50 ft (129.692 m); minimum since normal operating level was attained, 112,830 acre-ft (139 hm^3) June 4, 1969, elevation, 415.24 ft (126.565 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,940 acre-ft (165 hm^3) Aug. 1, elevation, 425.10 ft (129.570 m); minimum, 122,991 acre-ft (152 hm^3) May 22, elevation, 420.11 ft (128.050 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	423.85	131,150	-----
Oct. 31	423.00	129,260	-1,890
Nov. 30	423.11	129,503	+243
Dec. 31	422.99	129,239	-264
CAL YR 1977	-----	-----	+3,144
Jan. 31	423.93	131,326	+2,087
Feb. 28	424.66	132,958	+1,632
Mar. 31	424.60	132,820	-138
Apr. 30	424.13	131,769	-1,051
May 31	424.84	133,368	+1,599
June 30	424.50	132,600	-768
July 31	424.45	132,490	-110
Aug. 31	424.69	133,027	+537
Sept. 30	422.87	128,984	-4,043
WTR YR 1978	-----	-----	-2,166

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Descriptive location given is for reservoir outlet. Samples taken elsewhere within reservoir body.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
NOV , 1977							
09...	1640	1.0	44	7.0	7.9	1	9.8
09...	1645	20	46	7.1	7.8	1	9.8
09...	1650	50	45	7.2	7.6	1	9.8
09...	1655	100	42	7.1	6.1	2	10.0
09...	1700	180	57	7.0	3.9	0	5.5
DEC							
06...	1500	1.0	40	7.3	7.6	50	13.3
06...	1510	20	40	7.2	7.6	50	12.8
06...	1520	50	39	7.4	7.6	50	13.3
06...	1530	100	39	7.4	7.6	50	13.2
06...	1540	180	39	7.3	7.6	50	13.1
JAN , 1978							
10...	1525	1.0	38	6.4	6.5	10	12.0
10...	1530	20	41	6.9	5.9	15	11.7
10...	1535	50	41	6.9	5.8	20	11.5
10...	1540	100	41	7.1	5.8	20	11.5
10...	1545	180	42	7.1	5.7	35	11.4
FEB							
08...	1530	1.0	42	7.4	6.3	10	11.7
08...	1540	20	42	7.3	6.2	9	11.7
08...	1550	50	42	7.2	6.0	9	11.7
08...	1600	100	42	7.2	5.8	9	11.7
08...	1610	110	42	7.2	5.8	10	11.6
MAR							
07...	1415	1.0	46	7.2	6.1	9	11.6
07...	1425	20	45	7.1	5.8	9	11.6
07...	1435	50	45	7.2	5.6	9	11.5
07...	1445	100	45	7.3	5.4	9	11.6
07...	1500	110	45	7.2	5.5	30	11.6
APR							
04...	1410	1.0	47	8.0	9.3	3	11.8
04...	1430	20	47	7.6	7.8	4	11.6
04...	1440	50	48	7.6	6.2	5	11.6
04...	1455	100	49	7.6	5.6	6	11.5

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977							
09...	70	5	.12	.03	.07	.01	.00
09...	76	15	.14	.03	.06	.01	.00
09...	140	11	.13	.03	.03	.01	.00
09...	120	13	.47	.03	.08	.01	.00
09...	17	3	.25	.14	.19	.02	.00
DEC							
06...	K170	K13	.18	.08	.16	.11	.00
06...	310	K17	.19	.09	.20	.11	.00
06...	K120	K33	.19	.08	.15	.11	.00
06...	K90	K40	.20	.07	.16	.11	.00
06...	K91	K11	.20	.08	.20	.11	.00
JAN , 1978							
10...	--	--	.87	.03	.23	.03	.01
10...	--	--	.20	.05	.19	.04	.01
10...	--	--	.16	.04	.17	.04	.01
10...	--	--	.17	.06	.12	.04	.02
10...	--	--	.19	.06	.17	.08	.01
FEB							
08...	180	K8	.32	.06	.08	.03	.01
08...	88	K2	.28	.05	.09	.03	.00
08...	140	K7	.26	.04	.07	.04	.00
08...	80	K5	.21	.03	.06	.04	.00
08...	150	K7	.20	.04	.11	.06	.00
MAR							
07...	50	1	.17	.00	.08	.03	.00
07...	K31	1	.18	.01	.05	.03	.00
07...	K30	1	.15	.02	.09	.03	.00
07...	K31	2	.18	.02	.08	.03	.00
07...	170	1	.19	.03	.18	.08	.00
APR							
04...	K20	<2	.11	.04	.19	.02	.00
04...	K10	6	.14	.05	.16	.02	.00
04...	K10	<2	.13	.05	.14	.03	.00
04...	K8	<2	.14	.04	.14	.03	.01

K Results based upon colony counts outside the ideal range.

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
APR , 1978							
04...	1510	170	51	7.7	5.7	9	11.0
MAY							
02...	1415	1.0	45	7.7	11.8	2	12.5
02...	1425	20	45	7.4	8.6	2	11.8
02...	1435	50	50	7.4	6.7	4	11.2
02...	1445	100	50	7.4	5.9	6	11.1
02...	1455	174	51	7.2	5.8	12	9.7
JUN							
13...	1320	1.0	50	7.5	15.5	1	11.7
13...	1330	20	49	7.4	11.6	1	11.6
13...	1340	50	51	7.2	7.7	1	10.8
13...	1350	100	52	7.1	7.0	2	10.6
13...	1400	120	50	7.0	6.4	2	10.2
JUL							
18...	1305	1.0	50	7.1	14.8	1	11.2
18...	1315	20	51	7.2	9.5	1	11.1
18...	1320	50	51	7.1	8.4	1	10.5
18...	1330	100	52	7.1	7.6	1	9.6
18...	1340	--	53	7.0	7.0	2	9.8
AUG							
15...	1245	1.0	47	7.9	17.8	0	9.8
15...	1255	20	50	7.4	9.6	1	10.4
15...	1300	50	50	7.2	8.9	1	9.9
15...	1310	100	50	7.2	7.4	2	9.5
15...	1320	130	52	7.0	6.7	2	9.4
SEP							
13...	1235	1.0	49	7.6	14.1	1	10.3
13...	1240	20	50	7.4	9.9	1	9.9
13...	1250	50	50	7.3	8.9	1	9.5
13...	1255	100	54	7.3	7.7	1	9.0
13...	1300	160	59	7.1	6.5	2	8.0

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
APR , 1978							
04...	K10	<2	.15	.07	.12	.04	.01
MAY							
02...	K21	<1	.30	.04	.14	.01	.01
02...	78	5	.21	.05	.14	.01	.01
02...	62	3	.14	.08	.11	.02	.01
02...	K16	<1	.14	.05	.06	.02	.01
02...	80	1	.15	.08	.09	.04	.01
JUN							
13...	44	1	.00	.03	.19	.02	.00
13...	79	<1	.01	.03	.18	.01	.00
13...	28	<1	.08	.03	.06	.01	.00
13...	8	<1	.12	.03	.08	.01	.00
13...	13	<1	.14	.04	.10	.01	.00
JUL							
18...	K1600	1	.05	.02	.08	.01	.00
18...	450	<1	.05	.02	.10	.01	.00
18...	110	1	.08	.03	.03	.01	.00
18...	24	<1	.10	.02	.04	.01	.00
18...	14	1	.13	.02	.04	.01	.00
AUG							
15...	K1200	3	.00	.02	.14	.01	.00
15...	150	<1	.06	.02	.11	.01	.00
15...	40	<1	.09	.04	.13	.01	.00
15...	42	<1	.13	.02	.10	.01	.00
15...	14	<1	.15	.03	.08	.01	.00
SEP							
13...	K8900	5	.08	.01	.11	.01	.00
13...	260	<1	.04	.01	.08	.01	.00
13...	350	<1	.07	.01	.04	.00	.00
13...	22	1	.11	.01	.07	.01	.00
13...	32	<1	.17	.02	.07	.01	.00

K Results based upon colony counts outside the ideal range.

14237900 MAYFIELD POWERPLANT TAILWATER NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'15", long 122°35'12", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hyrologic Unit 17080005. Sampling site is at the downstream side of the powerhouse.

PERIOD OF RECORD.--October 1977 to September 1978

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)
NOV , 1977							
09...	1130	10700	48	7.2	8.3	2	10.0
DEC							
06...	1435	40800	42	6.7	7.7	50	13.6
JAN , 1978							
10...	1310	9720	40	7.4	6.0	15	11.6
FEB							
08...	1630	7450	47	7.5	6.0	10	11.8
MAR							
07...	1335	5290	46	7.1	6.4	9	11.6
APR							
04...	1330	3100	45	7.6	8.1	2	11.6
MAY							
02...	1330	3170	47	7.5	9.0	1	11.9
JUN							
13...	1215	3080	51	7.6	12.2	1	11.6
JUL							
18...	1230	2670	51	7.3	9.3	1	11.0
AUG							
15...	1305	2380	51	6.9	10.7	1	10.8
SEP							
13...	1340	2320	51	7.1	11.1	1	10.3

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1977							
09...	290	14	.15	.03	.07	.01	.00
DEC							
06...	K73	K40	.18	.07	.17	.11	.00
JAN , 1978							
10...	K61	K6	.22	.05	.13	.04	.01
FEB							
08...	130	K2	.28	.04	.08	.04	.01
MAR							
07...	46	<1	.19	.05	.09	.03	.00
APR							
04...	50	<2	.13	.06	.20	.02	.00
MAY							
02...	66	5	.30	.05	.09	.01	.00
JUN							
13...	K96	2	.02	.08	.10	.01	.00
JUL							
18...	3700	<1	.06	.02	.05	.01	.00
AUG							
15...	7	2	.05	.03	.15	.01	.00
SEP							
13...	K1300	1	.05	.02	.10	.01	.00

K Results based upon colony counts outside the ideal range.

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE¼NE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank, 1.1 mi (1.8 km) upstream from fish barrier dam, 1.4 mi (2.3 km) downstream from Mayfield Dam, 1.5 mi (2.4 km) upstream from Mill Creek, 2.1 mi (3.4 km) downstream from Winston Creek, and at mile 50.6 (81.4 km).

DRAINAGE AREA.--1,400 mi² (3,626 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only), April 1934 to current year. Published as "at Mayfield" 1910-11 and "near Mayfield" 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943,1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft (69.07 m) National Geodetic Vertical Datum of 1929. August 1910 to November 1911 nonrecording gage at site 2.5 mi (4.0 km) upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--Water discharge records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km) and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station.

AVERAGE DISCHARGE.--44 years (water years 1935-78), 6,359 ft³/s (180.1 m³/s) 61.68 in/yr (1,567 mm/yr), 4,607,000 acre-ft/yr (5,680 hm³/yr), adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft³/s (1,900 m³/s) Dec. 13, 1946, maximum gage height, 25.26 ft (7.699 m) Dec. 4, 1975; minimum, 37 ft³/s (1.05 m³/s) Apr. 16, 1962, gage height, 6.42 ft (1.957 m); minimum daily, 451 ft³/s (12.8 m³/s) Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Dec. 13, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 55,200 ft³/s (1,560 m³/s) Dec. 4, gage height, 23.69 ft (7.221 m); minimum, 2,070 ft³/s (58.6 m³/s) Oct. 18; minimum gage height, 9.35 ft (2.850 m) Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2120	4380	20800	12200	7400	5270	3110	3140	3100	4730	2450	2340
2	2120	7890	29900	10600	7400	5270	3100	3150	3120	4730	2320	2340
3	2140	9300	35600	9630	7400	5270	3100	3150	3110	4640	2320	2340
4	2150	9340	54100	9150	7420	5290	3100	3140	3100	4550	2320	2350
5	2140	9400	48200	9300	7450	5290	3100	3140	3550	4350	2320	2360
6	2120	9290	38900	9930	7450	5290	3110	3150	5610	4170	2350	2360
7	2110	10100	31800	9630	7420	5310	3110	3170	5730	4080	2350	2350
8	2120	10800	22100	9690	7370	5290	3100	3180	5070	3950	2320	2340
9	2120	10700	18000	9780	7420	5130	3100	3180	3760	3840	2310	2350
10	2130	10700	19700	9720	7400	4870	3100	3190	3100	3730	2320	2350
11	2130	10700	26000	9690	7400	4890	3110	3180	3070	3570	2340	2340
12	2120	10700	29200	9450	7370	4890	3120	3140	3070	3420	2340	2340
13	2120	10700	35300	9220	7400	4700	3120	3150	3500	3210	2350	2340
14	2120	10700	33400	9170	6520	3950	3120	3140	4260	3110	2350	2320
15	2130	10700	42200	9120	5710	3930	3140	3740	4260	2960	2350	2320
16	2130	10700	44000	9200	5710	3920	3140	3520	4260	2830	2340	2320
17	2130	10700	35600	9600	5730	3760	3140	3650	4250	2740	2350	2320
18	2120	11800	25400	12800	5730	3070	3140	3660	4250	2670	2340	2580
19	2120	14300	20400	12800	5090	3100	3140	3150	4260	2660	2340	2800
20	2430	14400	18200	12800	5310	3100	3140	3120	4260	2580	2350	2840
21	2920	14300	17200	12700	5820	3070	3140	3100	4570	2690	2350	2840
22	2920	14100	17000	9350	5620	3110	3150	3120	5290	2700	2340	2790
23	2940	18900	16600	9120	5310	3110	3150	3140	5290	2700	2350	2890
24	2930	21100	16700	9100	5290	3110	3140	3140	5310	2690	2350	3030
25	2920	21000	16700	9200	5290	3110	3140	3140	5290	2670	2340	3030
26	2900	23100	16700	7470	5310	3100	3120	3140	5310	2690	2340	3030
27	2880	20600	16700	7370	5290	3080	3120	3140	5210	2670	2340	3040
28	2890	20500	16700	7400	5290	3100	3120	3150	4990	2670	2340	3330
29	2920	20500	16700	7400	---	3110	3120	3170	4890	2670	2340	4070
30	2930	19900	16700	7020	---	3100	3120	3140	4790	2690	2340	4120
31	3780	---	14300	7400	---	3100	---	3120	---	2620	2340	---
TOTAL	75750	401300	811200	297010	179320	125690	93660	99540	129630	101980	72600	80170
MEAN	2444	13380	26170	9581	6404	4055	3122	3211	4321	3290	2342	2672
MAX	3780	23100	54100	12800	7450	5310	3150	3740	5730	4730	2450	4120
MIN	2110	4380	14300	7020	5090	3070	3100	3100	3070	2580	2310	2320
AC-FT	150300	796000	1609000	589100	355700	249300	185800	197400	257100	202300	144000	159000
†	-16,630	-55,867	-84,708	-162,277	-58,741	+32,518	+156,621	+258,651	+94,872	-5,163	-18,641	+2,723
MEAN‡	2,174	12,440	24,780	6,940	5,349	4,582	5,756	7,416	5,917	3,205	2,039	2,718
CFSM‡	1.55	8.89	17.7	4.96	3.82	3.27	4.11	5.30	4.23	2.29	1.46	1.94
IN.‡	1.79	9.91	20.41	5.71	3.98	3.77	4.58	6.11	4.71	2.64	1.68	2.17
AC-FT‡	133,700	740,100	1,524M	426,800	297,000	281,800	342,400	456,100	352,000	197,100	125,400	161,700

CAL YR 1977: TOTAL 2,080,550 MEAN 5,700 MAX 54,100 MIN 1,840 AC-FT 4,127,000
DO.....: MEAN‡ 6,297 CFSM‡ 4.50 IN‡ 61.06 AC-FT‡ 4,560,000
WTR YR 1978: TOTAL 2,467,850 MEAN 6,761 MAX 54,100 MIN 2,110 AC-FT 4,895,000
DO.....: MEAN‡ 6,957 CFSM‡ 4.97 IN‡ 67.46 AC-FT‡ 5,038,000

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.
M Thousands.

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1950 to current year.

INSTRUMENTATION.--Temperature recorder since October 1950.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.0°C July 28, 29, 1958; minimum, 0.5°C Jan. 28 to Feb. 2, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 13.0°C July 22, Aug. 10; minimum, 5.5°C Feb. 4, 5, 6, 7, 19, 20.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	10.5	10.5	9.0	9.0	9.0	8.5	8.0	8.5	6.5	6.0	6.5
2	10.5	10.0	10.5	9.0	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0
3	10.5	9.5	10.0	9.0	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0
4	10.0	9.0	9.5	9.0	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0
5	10.5	10.0	10.0	9.0	8.5	8.5	8.0	8.0	6.0	6.0	6.0	6.0
6	10.0	9.5	10.0	8.5	8.5	8.5	8.0	8.0	8.0	6.0	6.0	6.0
7	10.5	10.5	10.5	8.5	8.5	8.5	8.0	7.5	7.5	6.0	6.0	6.0
8	10.5	9.5	10.0	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0
9	10.0	9.5	10.0	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0
10	10.5	9.5	10.0	8.5	8.5	8.5	7.5	7.0	7.5	6.0	6.0	6.0
11	10.5	9.5	10.0	9.0	8.5	9.0	7.0	7.0	7.0	6.0	6.0	6.0
12	10.0	9.5	9.5	9.0	9.0	9.0	7.0	7.0	7.0	6.0	6.0	6.0
13	10.5	9.5	10.0	9.0	9.0	9.0	7.0	7.0	7.0	6.0	6.0	6.0
14	10.0	9.5	9.5	9.0	9.0	9.0	7.0	7.0	7.0	6.5	6.0	6.0
15	10.0	9.5	9.5	9.0	9.0	9.0	7.5	7.5	7.5	6.5	6.5	6.5
16	10.5	10.0	10.0	9.0	9.0	9.0	7.5	7.5	7.5	6.5	6.5	6.5
17	10.5	9.5	10.0	9.0	9.0	9.0	7.5	7.5	7.5	6.5	6.5	6.5
18	10.0	9.5	10.0	9.0	9.0	9.0	7.5	7.5	7.5	6.5	6.5	6.5
19	10.0	10.0	10.0	9.0	9.0	9.0	7.5	7.0	7.0	6.5	6.5	6.5
20	10.0	9.5	10.0	9.0	8.5	8.5	7.0	6.5	6.5	6.5	6.5	6.5
21	10.5	9.5	10.0	8.5	8.5	8.5	6.5	6.5	6.5	6.5	6.5	6.5
22	10.5	10.0	10.0	8.5	8.5	8.5	6.5	6.5	6.5	6.5	6.5	6.5
23	10.0	9.5	9.5	8.5	8.5	8.5	6.5	6.5	6.5	6.5	6.5	6.5
24	10.0	9.0	9.5	8.5	8.5	8.5	6.5	6.5	6.5	6.5	6.5	6.5
25	9.5	9.0	9.5	9.0	8.5	9.0	6.5	6.5	6.5	6.5	6.5	6.5
26	9.5	9.5	9.5	9.0	9.0	9.0	6.5	6.5	6.5	6.5	6.5	6.5
27	9.5	9.5	9.5	9.0	8.5	9.0	6.5	6.5	6.5	6.5	6.0	6.0
28	9.5	9.5	9.5	9.0	9.0	9.0	6.5	6.5	6.5	6.0	6.0	6.0
29	9.5	9.5	9.5	9.0	8.5	8.5	6.5	6.5	6.5	6.0	6.0	6.0
30	9.5	9.0	9.0	8.5	8.5	8.5	6.5	6.5	6.5	6.0	6.0	6.0
31	9.0	9.0	9.0	---	---	---	6.5	6.5	6.5	6.0	6.0	6.0
MONTH	11.5	9.0	10.0	9.0	8.5	9.0	8.5	6.5	7.0	6.5	6.0	6.0

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.0	6.0	6.0	6.5	6.5	6.5	7.5	6.5	7.0	---	---	---
2	6.0	6.0	6.0	6.5	6.0	6.5	7.5	6.5	7.0	---	---	---
3	6.0	6.0	6.0	6.0	6.0	6.0	9.0	7.5	8.0	---	---	---
4	6.0	5.5	6.0	6.0	6.0	6.0	9.0	7.5	8.5	---	---	---
5	5.5	5.5	5.5	6.0	6.0	6.0	8.0	7.0	7.5	---	---	---
6	6.0	5.5	5.5	6.0	6.0	6.0	8.0	7.0	7.5	---	---	---
7	6.0	5.5	5.5	6.0	6.0	6.0	8.0	7.5	8.0	---	---	---
8	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.0	7.5	---	---	---
9	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.0	8.0	---	---	---
10	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.0	7.5	---	---	---
11	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0	---	---	---
12	6.0	6.0	6.0	6.0	6.0	6.0	8.5	6.5	8.0	---	---	---
13	6.0	6.0	6.0	6.0	6.0	6.0	8.5	7.5	8.0	---	---	---
14	6.0	6.0	6.0	6.0	6.0	6.0	9.0	8.0	8.5	---	---	---
15	6.0	6.0	6.0	6.0	6.0	6.0	9.0	8.0	8.5	---	---	---
16	6.0	6.0	6.0	6.5	6.0	6.5	8.5	7.5	8.0	---	---	---
17	6.0	6.0	6.0	6.5	6.5	6.5	8.5	8.0	8.5	---	---	---
18	6.0	6.0	6.0	6.5	6.0	6.5	8.5	8.0	8.0	---	---	---
19	6.0	5.5	6.0	7.0	6.5	6.5	9.0	8.0	8.5	---	---	---
20	6.0	5.5	5.5	7.0	6.5	6.5	---	---	---	---	---	---
21	6.0	6.0	6.0	7.0	6.0	6.5	---	---	---	---	---	---
22	6.0	6.0	6.0	7.0	6.0	6.5	---	---	---	---	---	---
23	6.0	6.0	6.0	7.5	6.0	7.0	---	---	---	---	---	---
24	6.5	6.0	6.0	7.0	6.5	7.0	---	---	---	---	---	---
25	6.5	6.5	6.5	7.5	7.0	7.0	---	---	---	---	---	---
26	6.5	6.5	6.5	8.5	7.5	8.0	---	---	---	---	---	---
27	6.5	6.5	6.5	8.5	7.5	8.0	---	---	---	---	---	---
28	6.5	6.5	6.5	8.0	7.0	7.5	---	---	---	---	---	---
29	---	---	---	8.0	7.0	7.5	---	---	---	---	---	---
30	---	---	---	8.0	7.5	7.5	---	---	---	---	---	---
31	---	---	---	8.0	6.5	7.0	---	---	---	12.0	10.0	10.5
MONTH	6.5	5.5	6.0	8.5	6.0	6.5	9.0	6.5	8.0	12.0	10.0	10.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	10.5	11.5	9.5	8.5	9.0	11.5	10.0	10.5	12.0	10.5	11.0
2	11.5	10.0	11.0	9.5	9.0	9.0	11.5	10.5	11.0	12.0	10.0	11.5
3	10.0	9.0	9.5	10.0	8.5	9.0	12.0	10.5	11.5	11.5	10.0	11.0
4	11.5	9.0	10.5	10.0	8.5	9.0	11.5	10.0	11.0	12.0	10.5	11.0
5	11.0	10.0	11.0	9.5	8.5	9.0	12.0	10.0	11.0	11.0	10.5	11.0
6	12.0	9.5	10.5	10.0	8.5	9.0	12.5	11.0	11.5	11.5	11.0	11.0
7	11.0	9.0	10.0	9.5	8.5	9.0	12.0	11.5	11.5	11.5	10.5	11.0
8	10.0	8.5	9.5	10.5	8.5	9.5	12.5	10.5	11.5	12.5	10.5	11.0
9	9.5	8.0	8.5	10.0	9.0	9.5	11.5	10.5	11.0	12.5	11.0	12.0
10	11.0	8.0	9.5	10.0	9.0	9.5	13.0	11.0	12.0	11.5	10.5	11.0
11	12.5	9.5	11.0	10.0	9.5	10.0	12.5	11.0	11.5	11.5	11.0	11.5
12	12.5	10.5	11.5	10.0	9.0	10.0	12.5	11.5	12.0	11.0	10.5	11.0
13	12.5	11.5	12.0	10.5	9.5	10.0	12.5	11.0	11.5	11.5	10.5	11.0
14	12.5	11.5	12.5	10.5	9.5	10.0	12.5	11.5	12.0	11.0	10.5	11.0
15	12.0	11.5	12.0	10.5	9.5	10.0	12.5	10.0	11.5	11.0	10.5	10.5
16	11.5	10.5	11.0	10.0	9.0	9.5	12.0	10.0	11.0	12.0	10.0	11.0
17	11.5	10.0	10.5	10.0	9.5	10.0	11.5	11.0	11.5	11.0	10.5	11.0
18	11.5	9.0	10.0	10.5	9.0	10.0	12.0	11.0	11.5	11.0	10.5	11.0
19	11.5	9.0	10.0	11.0	10.0	10.5	11.5	11.0	11.0	11.5	10.5	11.0
20	11.5	9.5	10.5	12.5	10.0	11.5	11.5	11.0	11.0	11.5	10.5	11.0
21	11.5	9.0	10.0	12.0	11.0	11.5	11.5	10.5	11.0	11.0	10.0	11.0
22	10.5	9.0	10.0	13.0	11.0	11.5	11.5	11.0	11.0	10.5	10.0	10.5
23	11.0	9.5	10.0	12.0	10.5	11.0	12.5	11.5	12.0	11.5	10.0	11.0
24	10.0	9.0	9.5	11.5	10.5	11.0	11.5	10.5	11.0	11.5	10.5	11.0
25	11.0	9.5	10.0	12.0	10.5	11.5	11.5	10.0	10.5	11.0	10.0	10.5
26	10.5	8.5	9.0	12.0	10.5	11.5	12.0	10.5	11.5	11.0	10.0	10.5
27	10.5	9.0	9.5	12.0	10.0	11.0	12.0	11.0	11.5	11.5	10.5	11.0
28	10.5	9.0	9.5	11.5	10.5	11.0	12.0	11.5	11.5	11.5	11.0	11.5
29	10.0	8.5	9.5	12.0	11.0	11.5	11.5	10.5	11.5	12.0	11.0	11.5
30	10.0	9.5	9.5	12.0	10.0	11.0	12.0	10.5	11.0	11.0	10.0	10.5
31	---	---	---	12.5	10.0	11.0	12.0	11.0	11.5	---	---	---
MONTH	12.5	8.0	10.5	13.0	8.5	10.0	13.0	10.0	11.5	12.5	10.0	11.0
YEAR	13.0	5.5	8.5									

14238020 COWLITZ RIVER BELOW MILL CREEK HATCHERY NEAR SALKUM, WA

LOCATION.--Lat 46°30'31", long 122°37'15", in NW¼SE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site about 1,000 ft (305 m) downstream from fish barrier dam and 0.8 mi (1.3 km) downstream from gaging station (14238000).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)
NOV , 1977							
09...	1215	10700	47	7.1	8.8	2	11.2
DEC							
06...	1400	39700	37	6.8	7.8	40	12.9
JAN , 1978							
10...	1125	9720	37	7.5	6.1	15	12.1
FEB							
08...	1225	7380	41	7.4	6.2	10	12.2
MAR							
07...	1205	5310	45	7.1	6.5	9	12.4
APR							
04...	1210	3210	45	7.7	8.5	3	11.9
MAY							
02...	1200	3150	46	7.5	8.6	1	11.9
JUN							
13...	1100	3070	49	7.4	12.5	1	11.4
JUL							
18...	1120	2690	51	7.3	9.1	1	11.6
AUG							
15...	1215	2340	51	7.4	12.1	1	11.2
SEP							
13...	1055	2340	48	7.2	10.3	0	11.2

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1977							
09...	270	32	.16	.04	.08	.02	.00
DEC							
06...	K100	K31	.38	.06	.24	.11	.00
JAN , 1978							
10...	K840	K20	.22	.05	.15	.05	.01
FEB							
08...	250	K5	.22	.05	.10	.04	.01
MAR							
07...	64	2	.18	.04	.10	.03	.00
APR							
04...	K110	2	.12	.05	.21	.03	.00
MAY							
02...	270	4	.22	.06	.16	.02	.00
JUN							
13...	270	3	.03	.04	.11	.01	.01
JUL							
18...	K1500	<1	.07	.03	.06	.02	.00
AUG							
15...	100	1	.04	.03	.15	.01	.00
SEP							
13...	K920	3	.05	.02	.10	.01	.00

K Results based upon colony counts outside the ideal range.

14238545 BLUE CREEK HATCHERY TROUT POND NEAR TOLEDO, WA

LOCATION.--Lat 46°29'07", long 122°43'38", in SW¼NE¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site in second shoreward trout rearing pond from right bank of Cowlitz River.

PERIOD OF RECORD.--Water year October 1977 to September 1978

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)
NOV , 1977							
09...	1025	50	7.4	8.4	2	9.4	680
DEC							
06...	0945	42	6.7	7.9	35	9.3	K100
JAN , 1978							
10...	1020	44	7.0	6.1	10	9.6	200
FEB							
08...	1045	43	7.3	6.3	10	10.5	230
MAR							
07...	1135	48	6.9	7.3	8	9.5	176
APR							
04...	1120	47	7.2	9.2	2	9.6	210
MAY							
02...	1115	52	7.3	11.2	2	10.9	K1400
JUL							
18...	1035	64	7.5	14.1	1	11.6	440
AUG							
15...	1135	52	7.4	14.1	1	10.2	160
SEP							
13...	1015	52	7.2	12.9	1	10.0	K670

DATE	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
NOV , 1977						
09...	K22	.19	.19	.32	.06	.03
DEC						
06...	K27	.50	.25	.53	.15	.01
JAN , 1978						
10...	K10	.41	.09	.48	.08	.04
FEB						
08...	K5	.25	.24	.31	.08	.02
MAR						
07...	1	.19	.22	.39	.08	.02
APR						
04...	<2	.14	.22	.48	.08	.03
MAY						
02...	K150	.24	.10	.16	.05	.02
JUL						
18...	58	.18	.07	.37	.04	.00
AUG						
15...	1	.03	.08	.30	.04	.02
SEP						
13...	3	.03	.10	.30	.05	.03

K Results based upon colony counts outside the ideal range.

14238550 COWLITZ RIVER ABOVE BLUE CREEK NEAR TOLEDO, WA

LOCATION.--Lat 46°29'02", long 122°43'47", in SE¼NW¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, 0.5 mi (0.8 km) upstream from Blue Creek and 6.2 mi (10.0 km) northeast of Toledo.

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)
NOV , 1977							
09...	1010	10700	47	7.8	8.8	2	11.1
DEC							
06...	0945	37800	37	6.7	7.8	50	14.5
JAN , 1978							
10...	1040	9660	37	7.5	6.1	20	12.1
FEB							
08...	1120	7420	42	7.6	6.2	10	12.2
MAR							
07...	1120	5290	45	7.2	6.6	10	12.2
APR							
04...	1140	3100	45	7.8	8.7	1	12.3
MAY							
02...	1130	3120	47	7.6	9.0	1	12.0
JUN							
13...	1030	3080	50	7.4	12.1	1	11.4
JUL							
18...	1050	2670	50	7.4	10.0	1	11.5
AUG							
15...	1115	2320	53	7.4	13.2	1	10.8
SEP							
13...	1030	2310	50	7.2	10.7	0	9.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV , 1977							
09...	K810	13	.16	.04	.12	.03	.00
DEC							
06...	K73	K10	.19	.08	.27	.13	.02
JAN , 1978							
10...	K84	K20	.22	.06	.11	.04	.01
FEB							
08...	220	K2	.22	.04	.08	.04	.01
MAR							
07...	98	3	.18	.03	.08	.03	.01
APR							
04...	110	2	.12	.10	.21	.02	.00
MAY							
02...	104	1	.20	.05	.06	.02	.00
JUN							
13...	340	2	.03	.04	.10	.01	.01
JUL							
18...	3400	5	.06	.03	.08	.01	.00
AUG							
15...	68	9	.04	.03	.18	.01	.00
SEP							
13...	K1600	11	.06	.02	.08	.01	.00

K Results based upon colony counts outside the ideal range.

14238800 COWLITZ RIVER AT TOLEDO, WA

LOCATION.--Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, Hydrologic Unit 17080003, on right bank, at State Highway 505 bridge in Toledo, and at mile 33.7 (54.2 km).

DRAINAGE AREA.--1,461 mi² (3,784 km²).

PERIOD OF RECORD.--1975, 1977 to current year.

REMARKS.--Water discharge from rating, discharge value is good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1977											
04...	1440	2130	108	7.3	11.9	15	2	12.6	--	--	.10
NOV											
09...	1030	10500	59	--	8.6	--	3	11.3	630	13	.16
14...	1350	10900	66	6.8	9.4	35	5	11.8	--	--	.23
DEC											
05...	1320	46200	50	6.9	8.1	65	57	13.9	--	--	.23
06...	0845	33000	40	7.2	8.0	--	60	12.9	K73	K43	.23
JAN , 1978											
03...	1330	9400	59	7.3	6.1	50	28	12.5	--	--	.16
10...	0925	10000	45	7.0	6.0	--	15	12.0	110	K14	.21
FEB											
08...	0905	7700	47	7.5	6.2	--	10	12.0	180	K7	.23
14...	1320	7480	56	7.6	6.6	25	15	12.8	--	--	.21
MAR											
07...	1040	7150	52	7.3	6.6	--	10	12.1	K100	14	.19
13...	1300	5420	64	6.9	7.0	30	13	13.1	--	--	.17
APR											
04...	1040	3370	55	7.7	8.8	--	2	11.9	K150	2	.12
05...	1230	3390	58	7.8	8.9	20	6	12.5	--	--	.10
MAY											
02...	1030	3410	68	7.4	9.1	--	1	11.2	150	3	.22
08...	1400	3450	77	7.7	13.3	20	3	11.9	--	--	.18
JUN											
12...	1410	3270	90	7.6	13.1	--	3	11.5	--	--	.05
13...	0945	3230	83	7.2	12.1	--	1	10.8	K62	<2	.04
JUL											
18...	0950	2750	99	7.4	10.0	--	1	11.2	K1400	4	.06
24...	1400	2850	102	8.0	12.7	15	3	11.5	--	--	.05

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT , 1977										
04...	.03	--	--	--	--	.01	.00	.00	--	--
NOV										
09...	.03	.08	.11	.27	1.2	.02	.00	.00	8	227
14...	.07	--	--	--	--	.03	.00	.00	--	--
DEC										
05...	.08	--	--	--	--	.15	.01	.03	--	--
06...	.07	.11	.18	.41	1.8	.17	.00	.00	--	--
JAN , 1978										
03...	.11	--	--	--	--	.06	.02	.06	--	--
10...	.07	.13	.20	.41	1.8	.04	.01	.03	19	513
FEB										
08...	.05	.11	.16	.39	1.7	.05	.00	.00	--	--
14...	.10	--	--	--	--	.04	.01	.03	--	--
MAR										
07...	.05	.11	.16	.35	1.5	.03	.01	.03	5	97
13...	.10	--	--	--	--	.03	.01	.03	--	--
APR										
04...	.07	.17	.24	.36	1.6	.03	.01	.03	8	73
05...	.04	--	--	--	--	.02	.00	.00	--	--
MAY										
02...	.05	.04	.09	.31	1.4	.02	.00	.00	3	28
08...	.08	--	--	--	--	.01	.00	.00	--	--
JUN										
12...	.03	--	--	--	--	.01	.00	.00	--	--
13...	.04	.03	.07	.11	.50	.01	.00	.00	4	35
JUL										
18...	.03	.07	.10	.16	.70	.01	.00	.00	2	15
24...	.04	--	--	--	--	.01	.00	.00	--	--

K Results based upon colony counts outside the ideal range.

14238800 COWLITZ RIVER AT TOLEDO, WA--Continued

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
AUG , 1978											
14...	1410	2350	108	7.7	12.2	0	1	11.4	--	--	.04
15...	0945	2370	102	7.5	12.8	--	1	10.2	54	9	.04
SEP											
05...	1330	2550	110	7.5	12.6	5	2	11.4	--	--	.06
13...	0945	2390	103	7.2	10.8	--	1	10.6	K1700	23	.05

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)
AUG , 1978										
14...	.05	--	--	--	--	.01	.00	.00	--	--
15...	.03	.14	.17	.21	.90	.01	.00	.00	--	--
SEP										
05...	.11	--	--	--	--	.02	.00	.00	--	--
13...	.02	.12	.14	.19	.80	.01	.00	.00	3	19

K Results based upon colony counts outside the ideal range.

14242500 TOUTLE RIVER NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'11", long 122°43'27", in NW¼SE¼ sec.19, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank, 0.8 mi (1.3 km) downstream from confluence of North and South Forks, 4.9 mi (7.9 km) northeast of Silver Lake, and at mile 16.4 (26.4 km).

DRAINAGE AREA.--474 mi² (1,228 km²).

PERIOD OF RECORD.--September 1909 to August 1912, October 1919 to October 1921, May 1922 to December 1923, September 1929 to current year. Published as "near Castle Rock" 1909-12. Water temperatures October 1950 to September 1962, October 1963 to September 1972.

REVISED RECORDS.--WSP 292: 1909. WSP 754: 1930-32. WSP 1348: 1910(M), 1930-32(M), 1945.

GAGE.--Water-stage recorder. Datum of gage is 407.3 ft (124.15 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Aug. 4, 1912, nonrecording gage at site 2.0 mi (3.2 km) downstream at datum 307.3 ft (93.67 m) National Geodetic Vertical Datum of 1929. Oct. 9, 1919, to Dec. 14, 1923, water-stage recorder at site 300 ft (91 m) downstream at different datum. Sept. 25, 1929, to Apr. 17, 1952, water-stage recorder at two sites within 50 ft (15 m) of present site at present datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years (water years 1910-11, 1920-21, 1923, 1930-78) 2,067 ft³/s (58.54 m³/s) 59.22 in/yr (1,504 mm/yr), 1,498,000 acre-ft/yr (1,850 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s (1,220 m³/s) Dec. 2, 1977, gage height, 22.56 ft (6.876 m), from rating curve extended above 26,000 ft³ (736 m³/s) on basis of slope-area measurement at 20.90 ft (6.370 m); maximum gage height recorded, 22.7 ft (6.92 m) Dec. 23, 1933; minimum discharge, 240 ft³/s (6.80 m³/s) Nov. 21, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (255 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 25	2330	13,300	377	10.87	3.313	Dec. 6	2145	10,400	295	9.05	2.758
Dec. 2	1715	*43,200	1,220	*22.56	6.876	Dec. 13	1845	25,300	716	16.45	5.014

Minimum discharge, 443 ft³/s (12.5 m³/s) Aug. 10, 11, gage height, 1.73 ft (0.527 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	3870	6090	1500	1840	1400	1730	2310	1450	832	502	752
2	997	7340	29400	1430	2720	1320	1730	2080	1640	832	496	706
3	907	4730	20900	1800	2740	1290	1760	1900	1450	824	496	706
4	840	3490	12100	2660	2530	1290	1720	1870	1490	816	490	752
5	792	2880	7990	3290	2470	1240	2020	1780	1530	784	484	768
6	752	2400	8700	4030	2760	1170	1940	1640	1490	760	478	768
7	816	2630	8630	3280	3550	1380	1770	1500	1360	736	472	728
8	760	2320	6380	3420	4020	1900	1660	1430	1290	728	466	699
9	736	2110	4890	3670	3960	1600	1520	1390	1300	720	460	961
10	692	2790	4730	3820	3330	1480	1460	1410	1460	713	443	1870
11	657	2920	8510	3460	2820	1450	1440	1670	1440	706	449	1830
12	636	2770	9980	3210	2450	1430	1370	1610	1300	692	502	1450
13	657	3580	18100	3060	2180	1440	1330	2480	1460	657	594	1320
14	636	4810	19300	3030	1980	1460	1410	4840	1610	643	520	1260
15	608	5240	14800	2920	1920	1370	1470	5120	1500	643	587	1120
16	587	4800	10800	2680	1790	1320	2080	3800	1450	1460	699	1030
17	574	4020	7590	2580	1680	1300	1990	3030	1300	1100	671	961
18	562	3460	5680	2400	1620	1280	2310	2560	1230	864	587	907
19	544	2900	4410	2320	1550	1230	2630	2260	1200	776	568	848
20	532	2450	3600	2110	1540	1190	2880	2120	1140	713	562	800
21	532	2150	3120	2840	1530	1170	2840	2050	1110	671	568	776
22	526	1940	2760	3060	1480	1170	3460	1990	1100	636	615	840
23	601	2030	2470	2660	1450	1340	3600	1910	1050	615	622	848
24	657	2550	2320	2360	1440	1870	3040	1820	979	594	664	800
25	1050	7330	2160	2200	1520	2580	2800	1700	943	574	832	768
26	1150	11800	2010	2160	1670	2340	2900	1640	907	568	856	728
27	961	8260	1850	1950	1540	1990	3190	1780	872	587	760	699
28	840	7080	1770	1870	1460	2040	3220	1830	840	568	692	664
29	1100	6840	1820	1800	---	1910	2950	1780	872	544	643	657
30	3010	5630	1760	1700	---	1920	2630	1650	872	526	615	650
31	3400	---	1650	1680	---	1880	---	1500	---	520	643	---
TOTAL	28192	127120	236270	80950	61540	47750	66850	66450	37435	22402	18036	27666
MEAN	909	4237	7622	2611	2198	1540	2228	2144	1248	723	582	922
MAX	3400	11800	29400	4030	4020	2580	3600	5120	1610	1460	856	1870
MIN	526	1940	1650	1430	1440	1170	1330	1390	840	520	443	650
CFSM	1.92	8.94	16.1	5.51	4.64	3.25	4.70	4.52	2.63	1.53	1.23	1.95
IN.	2.21	9.98	18.54	6.35	4.83	3.75	5.25	5.22	2.94	1.76	1.42	2.17
AC-FT	55920	252100	468600	160600	122100	94710	132600	131800	74250	44430	35770	54880

CAL YR 1977 TOTAL 760387 MEAN 2083 MAX 29400 MIN 325 CFSM 4.40 IN 59.68 AC-FT 1508000
WTR YR 1978 TOTAL 820661 MEAN 2248 MAX 29400 MIN 443 CFSM 4.74 IN 64.41 AC-FT 1628000

14242700 TOUTLE RIVER NEAR CASTLE ROCK, WA

LOCATION.--Lat 46°18'40", long 122°54'45", in SW¼NE¼ sec.34, T.10 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at bridge on Interstate 5, 2.5 mi (4.0 km) north of Castle Rock, and at mile 0.3 (0.5 km).

DRAINAGE AREA.--512 mi² (1,326 km²).

PERIOD OF RECORD.--Water years 1960-71, 1974-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good. Prior to October 1971, at site 0.7 mi (1.1 km) upstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by the Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1515	854	69	7.0	11.0	35	8
NOV							
14...	1415	5340	43	6.8	8.4	90	40
DEC							
05...	1355	9090	38	6.6	6.5	70	58
JAN , 1978							
03...	1350	1900	56	7.3	3.9	20	5
FEB							
14...	1345	2100	51	7.6	5.9	20	2
MAR							
13...	1340	1500	54	7.2	7.7	25	4
APR							
05...	1330	2150	40	7.7	8.6	45	4
MAY							
08...	1430	1490	54	7.7	14.1	5	2
JUN							
12...	1445	1350	54	7.5	15.0	--	2
JUL							
24...	1430	594	66	7.8	21.2	15	2
AUG							
14...	1435	520	70	7.9	17.2	15	5
SEP							
05...	1400	777	73	7.6	15.2	20	9

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.9	.04	.04	.04	.01	.03
NOV						
14...	12.2	.27	.07	.25	.01	.03
DEC						
05...	13.0	.25	.06	.41	.01	.03
JAN , 1978						
03...	13.4	.16	.04	.02	.01	.03
FEB						
14...	12.5	.13	.04	.02	.00	.00
MAR						
13...	13.1	.05	.09	.01	.01	.03
APR						
05...	12.2	.03	.04	.03	.00	.00
MAY						
08...	11.6	.03	.06	.02	.01	.03
JUN						
12...	10.5	.01	.05	.02	.00	.00
JUL						
24...	8.9	.02	.04	.02	.01	.03
AUG						
14...	10.0	.01	.06	.03	.01	.03
SEP						
05...	10.7	.01	.07	.05	.01	.03

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'30", long 122°54'48", in SW¼SE¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 40 ft (12 m) downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi (4.3 km) downstream from Toutle River and at mile 17.3 (27.8 km).

DRAINAGE AREA.--2,238 mi^2 (5,796 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1926 to current year.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

CORRECTIONS.--WRD Wash 1974: 1973 adjusted figures.

GAGE.--Water-stage recorder. Datum of gage is 20.20 ft (6.157 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi (3.2 km) upstream at datum 14.93 ft (4.551 m) higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 5 ft (1.5 m) higher.

REMARKS.--Water-discharge records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km), and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station.

AVERAGE DISCHARGE.--51 years, 9,304 ft^3/s (263.5 m^3/s), 54.46 in/yr (1,434 mm/yr), 6,741,000 acre-ft/yr (8,310 hm^3/yr adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft^3/s (3,940 m^3/s) Dec. 23, 1933, gage height, 31.6 ft (9.63 m) present datum, from rating curve extended above 80,000 ft^3/s (2,270 m^3/s); minimum, 998 ft^3/s (28.3 m^3/s) Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86,400 ft^3/s (2,450 m^3/s) Dec. 2, gage height, 24.48 ft (7.462 m); minimum, 2,820 ft^3/s (79.9 m^3/s) Oct. 19, 20, gage height, 8.79 ft (2.679 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3500	8560	24500	14500	10100	7370	5460	6120	4860	5670	3220	3180
2	3380	16700	61900	12700	12800	7140	5460	5820	4830	5700	3050	3150
3	3290	14900	64000	12400	12300	7110	5580	5550	4830	5670	3000	3150
4	3220	13000	66700	14000	11400	7230	5490	5460	4860	5550	2980	3230
5	3160	12000	64100	14500	11100	7080	5910	5430	4890	5370	2950	3230
6	3110	11400	53500	16900	11500	6960	5940	5220	6660	5160	2950	3230
7	3170	11600	48900	15100	12200	7200	5640	5040	7020	5040	2950	3230
8	3140	12300	30100	15300	13400	8460	5430	4920	6870	4920	2950	3150
9	3080	12100	24400	15900	13400	7790	5220	4890	5730	4770	2900	3350
10	3040	12900	24300	16800	12500	7110	5100	4950	4860	4710	2930	4530
11	3000	13500	37100	15800	11500	6990	5040	5310	4830	4560	2950	4650
12	2960	13300	43400	14900	10800	7020	4950	5250	4680	4380	2980	4140
13	2980	14300	60500	14600	10400	6900	4890	5850	4770	4170	3080	3870
14	2950	17400	70300	15400	9790	6420	4980	8560	6030	3930	3000	3930
15	2920	18300	64600	14500	8630	6000	5010	9860	6000	3840	3000	3690
16	2900	16700	63800	13800	8490	5880	5850	8740	5910	4590	3200	3550
17	2880	15300	54200	13400	8280	5790	5880	7080	5760	4290	3180	3500
18	2850	14600	36800	15600	8110	5100	6060	7200	5640	3780	3080	3480
19	2850	16300	28100	16200	7620	4860	6420	6000	5610	3630	3050	3780
20	2880	16200	23900	15800	6810	4770	7140	5760	5520	3550	3050	3810
21	3490	15900	21500	17200	7650	4680	6990	5610	5580	3500	3100	3810
22	3570	15200	20500	15700	7230	4680	8670	5550	6240	3450	3080	3780
23	3690	17700	19600	13800	7140	4860	9510	5520	6330	3430	3100	3960
24	3800	23700	19300	13000	7110	5700	7930	5370	6330	3430	3150	4080
25	4280	28000	19100	12600	7550	6780	7140	5250	6300	3380	3300	4020
26	4450	42100	18800	11300	8040	6810	7050	5190	6270	3400	3350	3960
27	4180	32300	18700	10400	7830	6090	7340	5430	6180	3430	3230	3930
28	4030	29300	18500	10100	7510	5970	7270	5460	6030	3400	3150	3900
29	4350	28600	18700	9860	---	5880	6900	5370	5880	3380	3080	4560
30	6690	26500	18600	9330	---	5700	6480	5160	5880	3380	3080	4920
31	7600	---	17200	9540	---	5670	---	4980	---	3350	3080	---
TOTAL	111390	540660	1155600	430930	271190	196000	186730	181900	171180	130810	95150	112750
MEAN	3593	18020	37280	13900	9685	6323	6224	5868	5706	4220	3069	3758
MAX	7600	42100	70300	17200	13400	8460	9510	9860	7020	5700	3350	4920
MIN	2850	8560	17200	9330	6810	4680	4890	4890	4680	3350	2900	3150
AC-FT	220900	1072000	2292000	854700	537900	388800	370400	360800	339500	259500	188700	223600
†	-16,630	-55,867	-84,708	-162,277	-58,741	+32,518	+156,621	+258,651	+94,872	-5,163	-18,641	+2,723
MEAN‡	3,322	17,080	35,890	11,260	8,630	6,850	8,859	10,070	7,302	4,135	2,766	3,804
CFSM‡	1.48	7.63	16.0	5.03	3.86	3.06	3.96	4.50	3.26	1.85	1.24	1.70
IN.‡	1.71	8.51	18.49	5.80	4.01	3.53	4.42	5.19	3.64	2.13	1.43	1.90
AC-FT‡	204,300	1,016M	2,207M	692,400	479,200	421,300	527,000	619,500	434,400	254,300	170,100	226,300

CAL YR 1977: TOTAL 3,055,250 MEAN 8,371 MAX 70,300 MIN 2,450 AC-Ft 6,060,000
DO.....: MEAN‡ 8,967 CFSM‡ 4.01 IN‡ 54.40 AC-FT‡ 6,493,000
WTR YR 1978: TOTAL 3,584,290 MEAN 9,820 MAX 70,300 MIN 2,850 AC-FT 7,109,000
DO.....: MEAN‡ 10,020 CFSM‡ 4.48 IN‡ 60.76 AC-FT‡ 7,252,000

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.
M Thousands.

14243000 COWLITZ RIVER AT CASTLE ROCK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1950 to September 1973.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)
OCT , 1977							
04...	1545	3200	91	6.9	11.8	25	4
NOV							
14...	1435	18800	58	6.7	9.2	65	22
DEC							
05...	1415	63500	47	7.1	7.9	70	65
JAN , 1978							
03...	1410	12700	58	7.4	5.3	40	25
FEB							
14...	1415	10000	56	7.6	6.1	30	9
MAR							
13...	1400	6930	65	6.8	7.3	30	11
APR							
05...	1115	5940	55	7.8	9.1	40	4
MAY							
08...	1450	4920	69	7.5	13.3	5	3
JUN							
13...	1335	4770	81	7.6	13.2	--	4
JUL							
24...	1500	3420	84	7.6	16.3	15	2
AUG							
14...	1500	2980	99	7.7	14.8	5	3
SEP							
05...	1425	3220	89	7.6	14.2	10	5

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1977						
04...	11.5	.07	.03	.02	.00	.00
NOV						
14...	11.7	.32	.08	.11	.01	.03
DEC						
05...	13.3	.25	.08	.30	.01	.03
JAN , 1978						
03...	12.6	.18	.12	.06	.01	.03
FEB						
14...	13.1	.22	.09	.03	.01	.03
MAR						
13...	12.6	.18	.15	.03	.00	.00
APR						
05...	12.6	.10	.04	.02	.00	.00
MAY						
08...	11.6	.64	.08	.02	.00	.00
JUN						
13...	10.7	.04	.05	.02	.00	.00
JUL						
24...	9.7	.04	.04	.01	.01	.03
AUG						
14...	10.3	.03	.05	.01	.01	.03
SEP						
05...	10.9	.04	.05	.02	.00	.00

14244200 COWLITZ RIVER AT KELSO, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°08'44", long 122°54'47", near center of SE¼ sec.27, T.8 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at Main Street bridge between Kelso and West Kelso, 3.6 mi (5.8 km) upstream from Coweman River, and at mile 4.9 (7.9 km).

DRAINAGE AREA.--2,349 mi² (6,084 km²).

PERIOD OF RECORD.--Water years, 1960-66, 1971-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is poor.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data prior to January 1978 furnished by Washington Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1977										
04...	1610	3220	90	6.9	11.9	25	5	--	11.4	--
NOV										
14...	1500	17800	60	7.0	9.0	65	23	--	11.5	--
DEC										
05...	1445	63700	48	7.1	7.9	75	69	--	13.1	--
JAN , 1978										
03...	1440	12600	62	7.4	5.0	40	27	--	12.7	--
09...	1100	15600	45	6.6	6.1	--	20	--	11.9	K10
FEB										
07...	0945	11500	45	7.2	6.8	--	15	--	10.9	E55
MAR										
06...	1300	6990	52	7.0	6.6	--	8	--	10.2	3
APR										
05...	1200	5730	63	7.6	9.8	--	4	--	11.0	--
MAY										
08...	1030	4950	70	7.2	12.8	--	2	--	10.2	2
JUN										
06...	1130	6000	65	7.5	5.8	--	3	--	9.4	58
JUL										
07...	1450	5010	75	7.6	4.4	--	--	1.1	10.7	5
AUG										
01...	1200	3250	85	7.6	14.7	--	--	1.1	9.6	21
SEP										
14...	1115	4020	75	7.8	13.6	--	--	4.5	10.0	K21

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)
OCT , 1977										
04...	--	--	--	--	--	--	--	--	--	--
NOV										
14...	--	--	--	--	--	--	--	--	--	--
DEC										
05...	--	--	--	--	--	--	--	--	--	--
JAN , 1979										
03...	--	--	--	--	--	--	--	--	--	--
09...	K27	21	4	6.5	1.1	3.1	26	.3	.5	20
FEB										
07...	38	18	0	5.1	1.2	3.3	28	.3	.5	21
MAR										
06...	<3	19	0	5.6	1.3	3.5	28	.3	.5	25
APR										
05...	--	20	0	5.9	1.3	3.2	25	.3	.5	25
MAY										
08...	1	23	2	7.2	1.3	4.4	29	.4	.4	26
JUN										
06...	6	25	5	6.9	1.9	5.6	32	.5	.5	25
JUL										
07...	6	27	2	8.1	1.5	5.9	32	.5	.6	--
AUG										
01...	7	27	4	8.5	1.5	7.2	36	.6	.6	--
SEP										
14...	K13	26	3	8.0	1.5	8.6	41	.7	.6	--

[1] Results based upon colony counts outside the ideal range.

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA

DATE	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)
OCT , 1977										
04...	--	--	--	--	--	--	--	--	--	--
NOV										
14...	--	--	--	--	--	--	--	--	--	--
DEC										
05...	--	--	--	--	--	--	--	--	--	--
JAN , 1978										
03...	--	--	--	--	--	--	--	--	--	--
09...	0	16	8.0	4.0	2.9	.1	13	43	41	.06
FEB										
07...	0	17	2.1	3.3	2.9	.1	14	40	41	.05
MAR										
06...	0	21	4.0	1.8	3.1	.1	14	37	42	.05
APR										
05...	0	21	1.0	3.2	3.6	.1	14	38	44	.05
MAY										
08...	0	21	2.6	4.5	5.6	.0	14	50	50	.07
JUN										
06...	0	21	1.3	6.3	7.6	.0	14	43	55	.06
JUL										
07...	--	25	--	2.7	8.6	.0	12	49	55	.07
AUG										
01...	--	23	--	1.7	11	.1	14	57	58	.08
SEP										
14...	--	23	--	2.9	12	.1	15	65	63	.09

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)
OCT , 1977										
04...	--	--	.07	.03	--	--	--	--	--	--
NOV										
14...	--	--	.44	.06	--	--	--	--	--	--
DEC										
05...	--	--	.29	.09	--	--	--	--	--	--
JAN , 1978										
03...	--	--	.20	.04	--	--	--	--	--	--
09...	1810	--	.33	.09	--	--	--	.10	--	--
FEB										
07...	1240	30	.28	.03	.10	.13	.08	.05	.41	1.8
MAR										
06...	698	27	.18	.03	.00	.03	.00	.07	.21	.93
APR										
05...	588	2	.17	.01	.48	.49	.13	.36	.66	2.9
MAY										
08...	668	6	.13	.01	.19	.20	.11	.09	.33	1.5
JUN										
06...	697	34	.12	.01	.40	.41	.12	.29	.53	2.3
JUL										
07...	663	12	.04	.00	.08	.08	.01	.07	.12	.53
AUG										
01...	500	16	.05	.00	.17	.17	.03	.14	.22	.97
SEP										
14...	706	22	.12	.01	.27	.28	.00	.28	.40	1.8

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA

DATE	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1977										
04...	.02	--	.00	.00	--	--	--	--	--	--
NOV										
14...	.10	--	.01	.03	--	--	--	--	--	--
DEC										
05...	.29	--	.01	.03	--	--	--	--	--	--
JAN , 1978										
03...	.07	--	.02	.06	--	--	--	--	--	--
09...	.05	.03	--	--	--	2.1	.6	240	10100	12
FEB										
07...	.04	.01	--	--	1.3	--	--	25	807	52
MAR										
06...	.05	.02	--	--	1.6	--	--	10	189	96
APR										
05...	.02	.00	--	--	--	1.6	.4	4	62	92
MAY										
08...	.01	.00	--	--	2.5	--	--	2	27	91
JUN										
06...	.01	.00	--	--	1.5	--	--	22	356	97
JUL										
07...	.02	.00	--	--	--	.9	.5	6	81	73
AUG										
01...	.01	.00	--	--	1.1	--	--	6	53	90
SEP										
14...	.03	.02	--	--	2.5	--	--	22	239	94

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
JAN , 1978										
09...	1100	1	1	0	0	0	0	1	0	1
APR										
05...	1200	1	0	1	100	100	0	1	0	1
JUL										
07...	1450	0	0	0	300	100	200	1	1	0

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
JAN , 1978										
09...	0	0	0	0	0	0	26	18	8	1300
APR										
05...	0	0	0	0	0	0	3	1	2	330
JUL										
07...	0	0	0	1	1	0	13	11	2	210

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)
JAN , 1978										
09...	--	90	25	21	4	40	30	10	.0	.0
APR										
05...	--	40	8	6	2	20	10	10	.0	.0
JUL										
07...	140	70	9	6	3	10	5	5	.0	.0

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN , 1978										
09...	.0	0	0	0	0	0	0	50	30	20
APR										
05...	.0	0	0	0	0	0	0	10	0	10
JUL										
07...	.0	0	0	0	0	0	0	110	100	10

14244200 COWLITZ RIVER AT KELSO, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO JUNE 1978

DATE	MAR 6,78	MAY 8,78	JUN 6,78
TIME	1300	1030	1130
TOTAL CELLS/ML	120	1700	3700
DIVERSITY: DIVISION	0.0	1.1	1.0
.CLASS	0.0	1.1	1.0
..ORDER	0.9	1.4	1.2
...FAMILY	1.8	2.3	2.2
....GENUS	2.4	2.3	2.2

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...SCENEDESMACEAE						
....SCENEDESMUS	*	0	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	57	3	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	55#	45	19	1	--	-
....MELOSIRA	24#	20	--	-	93	3
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	490	13
...CYMBELLACEAE						
....CYMBELLA	12	10	230	13	460	13
...EUNOTIACEAE						
....EUNOTIA	6	5	--	-	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	910#	53	69	2
....HANNAEA	--	-	--	-	23	1
....SYNEDRA	6	5	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	6	5	57	3	190	5
...NAVICULACEAE						
....NAVICULA	6	5	57	3	230	6
...NITZSCHIACEAE						
....NITZSCHIA	6	5	--	-	140	4
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROCCOCCALES						
...CHROCCOCCAEAE						
....ANACYSTIS	--	-	150	9	--	-
..HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	-	170	10	--	-
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	--	-	2000#	53
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	23	1
....TRACHELOMONAS	--	-	76	4	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%
Additional phytoplankton data available from District office in Tacoma.

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
APR , 1978						
05...	1200	.079	.236	.000	.000	30
MAY						
08...	1030	3.23	3.54	.690	.160	33

14245000 COWEMAN RIVER NEAR KELSO, WA

LOCATION.--Lat 46°07'42", long 122°50'14", in SE¼SW¼ sec.32, T.8 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 3.4 mi (5.5 km) southeast of Kelso High School, 3.9 mi (6.3 km) downstream from Goble Creek, and at mile 7.5 (12.1 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.--July 1950 to current year. Chemical analyses, October 1961 to September 1972, October 1974 to September 1975, collected at site 4.7 mi (7.6 km) downstream, were published as 14245000 prior to October 1974 and 14245100 "at Kelso" thereafter. Water temperatures July 1950 to September 1972.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m), from topographic map.

REMARKS.--Records excellent except those for period February 3-16, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--28 years, 431 ft^3/s (12.21 m^3/s), 49.18 in/yr (1,249 mm/yr), 312,300 acre-ft/yr (385 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,940 ft^3/s (282 m^3/s) Dec. 2, 1977, gage height, 14.67 ft (4.471 m) from rating curve extended above 4,900 ft^3/s (139 m^3/s) on basis of slope-area measurement at gage height 12.8 ft (3.90 m); minimum, 22 ft^3/s (0.62 m^3/s) Sept. 22, 1951; minimum gage height, 2.54 ft (0.774 m) Aug. 14, 15, 1975.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1950, reached a stage of 12.8 ft (3.90 m) from floodmarks, discharge, 7,730 ft^3/s (219 m^3/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft^3/s (73.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge ($m^3.s$)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 25	1500	3,480	98.6	8.48	2.585	Dec. 13	1700	5,610	159	10.61	3.234
Dec. 2	1300	*9,940	282	*14.67	4.471						

Minimum discharge, 46 ft^3/s (1.30 m^3/s) Aug. 10, gage height, 2.88 ft (0.878 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199	950	1540	299	498	264	261	369	200	113	65	124
2	172	1520	7110	288	868	249	292	330	185	110	67	104
3	150	871	4240	344	880	246	306	299	173	112	65	101
4	134	586	2620	510	780	240	325	302	163	113	62	128
5	121	453	1700	780	700	225	510	282	155	108	59	122
6	111	351	1810	1080	740	210	502	246	145	103	57	115
7	125	419	1920	780	940	267	418	237	141	97	55	110
8	111	364	1390	680	1100	348	355	220	139	97	54	130
9	105	330	1050	675	1050	282	313	215	143	97	51	279
10	97	655	970	700	880	261	288	215	173	99	49	580
11	92	612	1750	640	720	264	270	299	192	99	54	502
12	87	505	2190	615	600	249	249	276	159	94	96	309
13	93	684	4220	615	540	270	255	542	215	87	121	276
14	87	1200	4070	620	480	270	282	976	279	82	77	249
15	82	1220	3710	585	430	255	255	1010	234	84	103	207
16	79	963	3070	514	380	246	351	695	197	351	103	175
17	77	777	1940	510	352	237	373	530	175	185	104	163
18	76	659	1350	478	334	222	510	434	159	143	84	153
19	75	531	1000	466	320	212	580	369	149	124	84	137
20	73	439	805	422	309	202	615	320	141	110	87	130
21	72	380	690	720	299	197	700	285	135	99	101	133
22	72	347	600	800	279	190	1110	270	135	90	99	141
23	93	421	526	660	267	237	1130	252	130	85	103	143
24	99	637	482	550	264	327	815	240	126	80	121	131
25	163	2210	442	494	276	410	645	228	122	79	155	121
26	188	2170	406	458	330	360	595	240	121	77	133	115
27	138	1560	379	402	295	330	565	313	113	82	112	108
28	121	1460	358	376	279	310	522	292	106	79	96	103
29	181	1690	365	351	---	306	466	267	145	73	85	101
30	772	1210	355	327	---	302	422	237	130	68	79	104
31	656	---	327	373	---	279	---	215	---	67	92	---
TOTAL	4701	26174	53385	17112	15190	8267	14280	11005	4780	3287	2673	5294
MEAN	152	872	1722	552	543	267	476	355	159	106	86.2	176
MAX	772	2210	7110	1080	1100	410	1130	1010	279	351	155	580
MIN	72	330	327	288	264	190	249	215	106	67	49	101
CFSM	1.28	7.33	14.5	4.64	4.56	2.24	4.00	2.98	1.34	.89	.72	1.48
IN.	1.47	8.18	16.69	5.35	4.75	2.58	4.46	3.44	1.49	1.03	.84	1.65
AC-FT	9320	51920	105900	33940	30130	16400	28320	21830	9480	6520	5300	10500

WTR YR 1978 TOTAL 166148 MEAN 455 MAX 7110 MIN 49 CFSM 3.82 IN 51.94 AC-FT 329600
CAL YR 1977 TOTAL 148449 MEAN 407 MAX 7110 MIN 39 CFSM 3.42 IN 46.41 AC-FT 294400

14247400 COLUMBIA RIVER AT BRADWOOD, OR

LOCATION.--Lat 46°11'45", long 123°25'50", in SW¼NE¼ sec.9, T.8 N., R.6 W., Clatsop County, Hydrologic Unit 17080003, at Bradwood, and at mile 38.9 (62.6 km).

DRAINAGE AREA.--257,100 mi² (665,900 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1976 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 22.5°C Aug. 12, 16, 17, 1977; minimum, 2.5°C on several days in 1977 and Jan. 5, 6, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 8-15; minimum, 2.5°C Jan. 5, 6.

WATER QUALITY DATA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN DEMAND, CHEM-ICAL (LOW LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)
OCT , 1977											
11...	1115	155	8.0	15.5	9.5	9	--	--	8.4	85	.12
NOV											
16...	1115	154	7.5	10.5	11.0	20	120	150	10	74	.10
JAN , 1978											
26...	1100	136	7.3	5.3	13.0	12	600	300	16	85	.12
FEB											
03...	1100	165	7.9	5.3	12.2	2	58	170	14	104	.14
14...	1200	142	7.4	4.8	12.5	7	53	K14	14	100	.14
MAR											
16...	1100	169	7.7	6.2	12.1	4	67	80	13	86	.12
APR											
14...	1200	170	7.7	9.8	11.9	13	K75	K5	15	102	.14
MAY											
17...	1100	132	7.9	12.3	11.3	22	190	K10	12	89	.12
JUN											
08...	1200	121	7.9	16.8	11.4	10	410	K2	8.2	75	.10
JUL											
12...	1130	115	8.1	17.9	8.0	11	K270	K2	7.5	66	.09
AUG											
18...	1300	130	8.1	20.4	8.6	26	K19	K8	8.5	76	.10
SEP											
20...	1200	140	7.4	17.0	9.5	14	K18	K5	9.0	86	.12

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
OCT , 1977										
11...	6	.09	.03	.07	.10	.19	.84	.04	2	<10
NOV										
16...	20	.23	.04	.06	.10	.33	1.5	.06	2	3
JAN , 1978										
26...	39	.40	.04	.23	.27	.67	3.0	.03	2	4
FEB										
03...	20	.41	.02	.15	.17	.58	2.6	.07	1	--
14...	32	.39	.08	.07	.15	.54	2.4	.07	2	0
MAR										
16...	13	.42	.03	.10	.13	.55	2.4	.10	1	0
APR										
14...	19	.33	.08	.43	.51	.84	3.7	.06	1	6
MAY										
17...	31	.12	.03	.60	.63	.75	3.3	.08	1	4
JUN										
08...	71	.00	.01	.51	.52	.52	2.3	.02	2	2
JUL										
12...	54	.00	.00	.26	.26	.26	1.2	.04	0	--
AUG										
18...	7	.05	.05	.38	.43	.48	2.1	.04	2	2
SEP										
20...	7	.11	.03	.32	.35	.46	2.0	.04	1	--

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

WATER QUALITY DATA

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOROPHYLL A PHYTOPLANKTON, UNCORR. (UG/L)	CHLOROPHYLL B PHYTOPLANKTON, UNCORR. (UG/L)
OCT , 1977										
11...	5	10	230	<100	.0	0	30	1.8	.614	.529
NOV										
16...	4	18	950	7	.0	0	20	2.6	6.50	.806
JAN , 1978										
26...	10	14	1100	34	.0	1	30	2.6	3.24	2.45
FEB										
03...	0	16	640	24	.1	0	30	--	1.65	.000
14...	0	63	920	19	.2	0	70	2.4	--	--
MAR										
16...	0	10	530	2	.0	0	40	2.1	4.03	.000
APR										
14...	0	17	1100	33	.5	0	40	2.0	.000	.000
MAY										
17...	0	60	900	14	.1	0	60	3.0	6.64	.845
JUN										
08...	0	20	720	8	.0	0	40	4.3	20.7	.000
JUL										
12...	0	13	810	--	.0	0	10	3.1	15.0	1.78
AUG										
18...	0	25	580	12	.0	0	30	2.1	7.54	.509
SEP										
20...	10	41	750	--	.0	0	40	2.0	--	--

DATE	TIME	CALCIUM TOTAL RECOVERABLE (MG/L AS CA)	MAGNESIUM, TOTAL RECOVERABLE (MG/L AS MG)	SODIUM, TOTAL RECOVERABLE (MG/L AS NA)	POTASSIUM, TOTAL RECOVERABLE (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	OIL AND GREASE (MG/L)
OCT , 1977												
11...	1115	14	4.3	6.4	1.0	66	--	54	1.1	12	4.9	0
NOV												
16...	1115	11	4.4	7.6	1.2	61	0	50	3.1	3.4	5.3	0
JAN , 1978												
26...	1100	14	4.5	6.1	1.2	58	0	48	4.7	10	3.5	--
FEB												
03...	1100	16	5.5	8.7	1.6	72	0	59	1.5	13	6.7	0
14...	1200	--	--	--	--	--	--	--	--	--	--	0
APR												
14...	1200	18	5.6	8.5	1.6	77	0	63	2.5	13	5.1	0
JUL												
12...	1130	13	3.6	5.0	1.1	47	0	39	.6	7.7	3.1	0

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.5	16.0	12.5	12.5	8.0	7.5	4.0	3.5	5.0	5.0	6.0	6.0
2	16.0	16.0	12.5	12.5	8.0	7.5	4.0	3.5	5.0	5.0	6.0	5.5
3	16.0	15.5	12.5	12.0	8.0	8.0	3.5	3.5	5.5	5.0	6.0	5.5
4	15.5	15.5	12.0	11.5	8.0	8.0	3.0	3.0	5.5	5.5	5.5	5.5
5	15.5	15.0	11.5	11.5	8.0	7.5	2.5	2.5	5.5	5.5	5.5	5.5
6	15.0	15.0	11.5	11.0	8.0	7.5	3.0	2.5	6.0	5.5	5.5	5.5
7	15.0	15.0	11.0	11.0	7.5	7.5	3.5	3.0	6.5	6.0	5.5	5.5
8	15.0	14.5	11.0	10.5	7.5	7.0	4.5	3.5	6.0	6.0	6.0	5.5
9	14.5	14.5	11.0	10.5	7.0	7.0	5.0	4.5	6.0	6.0	6.0	5.5
10	14.5	14.5	11.0	11.0	7.0	6.5	5.5	5.0	6.0	6.0	6.5	6.0
11	15.0	14.5	11.0	11.0	6.5	6.5	5.5	5.5	6.0	5.5	6.5	6.0
12	15.0	14.5	11.0	11.0	6.5	6.5	5.5	5.5	6.0	5.5	6.5	6.0
13	15.0	15.0	11.0	11.0	7.0	6.5	5.5	5.0	5.5	5.5	6.5	6.0
14	15.0	14.5	11.0	11.0	7.5	7.0	5.0	5.0	5.5	5.0	6.5	6.0
15	15.0	14.5	11.0	10.5	8.0	7.0	5.0	5.0	5.0	5.0	6.5	6.5
16	15.0	14.5	10.5	10.5	7.5	7.5	5.0	5.0	5.0	5.0	6.5	6.0
17	14.5	14.0	10.5	10.5	8.0	7.5	5.5	5.0	5.0	5.0	7.0	6.5
18	14.5	14.0	10.5	10.0	7.5	7.0	5.5	5.0	5.0	5.0	7.0	6.5
19	14.5	14.0	9.5	9.0	7.0	6.5	5.5	5.0	5.5	5.0	7.5	7.0
20	14.5	14.0	9.0	8.5	6.5	6.0	5.5	5.0	5.5	5.5	7.5	7.0
21	14.5	14.0	8.5	8.0	6.0	5.5	5.5	5.5	6.0	5.5	7.5	7.5
22	14.5	14.0	8.0	7.5	5.5	5.0	5.5	5.5	6.0	6.0	7.5	7.5
23	14.0	14.0	7.5	6.5	5.0	4.5	5.5	5.5	6.0	6.0	8.0	7.5
24	14.5	14.0	6.5	6.5	4.5	4.5	5.5	5.5	6.0	6.0	7.5	7.5
25	14.5	14.0	7.0	6.5	5.0	5.0	5.5	5.5	6.0	6.0	8.0	7.5
26	14.0	14.0	6.5	6.5	5.0	5.0	5.5	5.5	6.0	6.0	8.0	8.0
27	14.0	13.5	7.0	6.5	5.0	5.0	5.5	5.0	6.0	6.0	8.5	8.0
28	13.5	13.5	7.5	7.0	5.0	4.5	5.0	5.0	6.0	6.0	8.5	8.5
29	13.5	13.5	8.0	7.5	4.5	4.5	5.0	5.0	---	---	9.0	8.5
30	13.5	13.0	8.0	8.0	4.5	4.0	5.0	5.0	---	---	9.0	9.0
31	13.0	12.5	---	---	4.0	4.0	5.0	5.0	---	---	9.0	9.0
MONTH	16.5	12.5	12.5	6.5	8.0	4.0	5.5	2.5	6.5	5.0	9.0	5.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	9.0	9.0	11.0	10.5	15.0	14.5	17.5	17.5	20.0	20.0	20.0	20.0
2	9.0	9.0	11.0	11.0	15.5	15.0	17.5	17.5	20.0	20.0	20.0	20.0
3	9.0	9.0	11.0	11.0	15.5	15.5	17.5	17.5	20.0	20.0	20.0	19.5
4	9.5	9.0	11.0	11.0	16.0	15.5	17.5	17.5	20.0	20.0	19.5	19.5
5	9.5	9.0	11.0	11.0	16.5	16.0	17.5	17.0	20.5	20.0	19.5	19.5
6	9.5	9.0	11.5	11.0	16.5	16.5	17.0	17.0	20.5	20.5	19.5	19.5
7	9.5	9.0	12.0	11.5	17.0	16.5	17.5	17.0	21.0	20.5	19.5	19.0
8	10.0	9.5	12.0	11.5	16.5	16.5	17.5	17.5	21.5	21.0	19.0	19.0
9	10.0	9.5	12.0	12.0	16.5	16.5	17.5	17.5	21.5	21.0	19.0	19.0
10	10.0	10.0	12.0	12.0	16.5	16.5	18.0	17.5	21.5	21.5	19.0	19.0
11	10.0	10.0	12.5	12.0	16.5	16.0	18.0	18.0	21.5	21.5	19.0	18.0
12	10.0	10.0	12.5	12.5	16.0	16.0	18.0	18.0	21.5	21.5	18.0	18.0
13	10.0	9.5	12.5	12.5	16.5	16.0	18.0	18.0	21.5	21.5	18.5	18.0
14	9.5	9.5	12.5	12.5	16.5	16.5	18.5	18.0	21.5	21.5	18.5	18.5
15	9.5	9.5	12.5	12.0	16.5	16.5	18.5	18.5	21.5	21.0	18.5	18.5
16	9.5	9.5	12.5	12.5	16.5	16.5	18.5	18.5	21.0	21.0	18.5	18.5
17	9.5	9.5	12.5	12.5	16.5	16.0	18.5	18.5	21.0	21.0	18.5	18.0
18	9.5	9.5	13.0	12.5	17.0	16.5	19.0	18.5	20.5	20.5	18.0	18.0
19	9.5	9.5	13.5	13.0	17.0	16.5	19.0	19.0	20.5	20.0	18.0	17.5
20	10.0	9.5	14.0	13.5	17.0	17.0	19.0	19.0	20.0	20.0	17.5	17.5
21	10.0	10.0	14.0	14.0	17.0	17.0	19.5	19.0	20.0	20.0	17.0	17.0
22	10.0	10.0	14.0	13.5	17.0	17.0	20.0	19.5	20.0	20.0	17.0	17.0
23	10.5	10.0	13.5	13.5	17.0	17.0	20.5	20.0	20.0	20.0	17.0	17.0
24	10.5	10.0	13.5	13.5	17.0	17.0	20.5	20.5	20.0	19.5	17.0	17.0
25	10.5	10.5	13.5	13.5	17.0	17.0	20.5	20.5	19.5	19.5	17.0	16.5
26	10.5	10.5	13.5	13.5	17.0	17.0	21.0	21.0	19.5	19.0	17.5	17.0
27	10.5	10.5	13.5	13.5	17.0	17.0	21.0	21.0	19.0	19.0	17.0	17.0
28	10.5	10.5	14.0	13.5	17.5	17.0	21.0	20.5	19.0	19.0	17.5	17.0
29	10.5	10.5	14.0	14.0	17.5	17.5	20.5	20.5	19.5	19.5	17.5	17.0
30	10.5	10.5	14.5	14.0	17.5	17.5	20.5	20.5	20.0	20.0	17.5	17.5
31	---	---	14.5	14.5	---	---	20.5	20.0	20.0	20.0	---	---
MONTH	10.5	9.0	14.5	10.5	17.5	14.5	21.0	17.0	21.5	19.0	20.0	16.5
YEAR	21.5	2.5										

14270000 COLUMBIA RIVER NEAR ILWACO, WA

LOCATION.--Lat 46°16'00", long 124°02'12", T.9 N., R.11 W., Pacific County, Hydrologic Unit 17080006, on right bank at U.S. Corps of Engineers signal tower 100 ft (30 m) upstream from "A" jetty, 3.0 mi (4.8 km) south of Ilwaco, and at mile 2.4 (3.9 km).

DRAINAGE AREA.--258,000 mi² (668,000 km²).

PERIOD OF RECORD.--June to October 1977, June to September 1978.

GAGE.--Water-stage recorder. Datum of gage is at -10.0 ft (-3.048 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Station in tidal effect at all stages.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 15.47 ft (4.715 m) Sept. 17, 1977 and Oct. 24, 1977; minimum gage height, 3.37 ft (1.027 m) June 30, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height during period Oct. 1-24, June 23-Sept. 30, 15.47 ft (4.715 m) Oct. 24; minimum gage height, 3.62 ft (1.103 m) July 20.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.88	6.70										
2	13.26	6.81										
3	12.84	7.15										
4	12.95	9.72										
5	13.01	7.88										
6	12.96	8.05										
7	12.83	8.01										
8	13.03	7.59										
9	13.20	7.27										
10	13.53	6.86										
11	14.10	6.34										
12	14.66	5.75										
13	15.07	5.01										
14	15.41	4.93										
15	15.35	4.78										
16	14.74	4.96										
17	14.62	5.36										
18	13.93	8.46										
19	13.41	6.17										
20	13.26	6.63										
21	13.55	7.07										
22	14.08	7.04										
23	14.51	7.52										
24	15.47	7.27										
25	---	---										
26	---	---										
27	---	---										
28	---	---										
29	---	---										
30	---	---										
31	---	---										
MEAN	13.90	6.82										

DAY	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---	14.36	6.71	13.58	5.92	14.34	6.95
2					---	---	14.40	6.24	12.12	5.55	14.53	6.81
3					---	---	12.39	5.80	13.63	5.58	14.26	6.77
4					---	---	14.11	5.62	13.64	5.44	14.31	6.98
5					---	---	14.06	5.24	13.53	5.39	14.24	7.22
6					---	---	13.86	5.08	13.28	5.60	14.40	7.28
7					---	---	13.73	5.31	13.15	6.10	14.33	7.43
8					---	---	13.49	5.48	13.57	6.71	15.02	8.34
9					---	---	13.10	5.90	13.35	7.11	15.40	10.55
10					---	---	12.93	6.40	13.51	7.80	14.53	8.22
11					---	---	12.93	6.99	13.98	7.80	14.29	7.48
12					---	---	13.14	7.44	14.13	7.58	14.43	6.87
13					---	---	13.39	7.93	14.10	7.06	14.62	6.32
14					---	---	13.76	7.78	14.59	6.18	14.73	5.76
15					---	---	14.09	7.23	14.94	5.63	13.97	5.39
16					---	---	14.29	6.31	15.09	4.96	14.68	5.38
17					---	---	14.58	5.06	13.42	4.47	14.55	5.69
18					---	---	14.97	4.28	15.05	4.28	14.73	5.79
19					---	---	12.93	3.70	15.19	4.50	14.44	5.89
20					---	---	15.23	3.62	14.87	5.09	14.46	6.35
21					---	---	15.33	3.83	14.52	5.77	14.38	7.14
22					---	---	15.12	4.42	14.41	6.82	14.02	9.50
23					15.28	4.07	14.56	4.90	14.75	8.00	13.63	7.64
24					14.69	4.67	14.14	5.71	14.57	9.37	13.05	7.72
25					13.91	5.24	13.96	7.01	13.98	8.07	13.18	7.81
26					13.62	6.15	13.95	7.65	13.50	7.78	13.41	8.04
27					13.80	7.20	13.86	7.72	13.40	7.54	13.32	7.79
28					14.13	7.88	13.54	7.61	13.42	7.25	13.36	7.46
29					14.12	7.57	13.28	7.11	13.57	6.97	13.52	7.29
30					14.16	7.20	13.55	6.47	13.82	6.70	13.76	7.28
31					---	---	13.49	6.18	13.09	6.74	---	---
MEAN					14.21	6.25	13.89	6.02	13.93	6.44	14.20	7.17
YEAR	14.00	6.58										

14270000 COLUMBIA RIVER NEAR ILWACO, WA--Continued

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.04	8.69										
2	12.20	8.86										
3	11.75	9.06										
4	11.83	---										
5	12.19	10.32										
6	12.56	10.33										
7	12.68	9.62										
8	12.98	8.84										
9	13.20	8.01										
10	---	6.89										
11	13.41	6.68										
12	13.81	6.96										
13	14.10	7.22										
14	14.04	7.72										
15	13.86	8.04										
16	13.36	8.10										
17	12.99	8.77										
18	13.10	---										
19	12.89	9.23										
20	13.05	9.21										
21	13.23	8.67										
22	13.89	8.31										
23	14.00	8.00										
24	---	8.07										
25	---	---										
26	---	---										
27	---	---										
28	---	---										
29	---	---										
30	---	---										
31	---	---										
MEAN	13.10	8.44										

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1					---	---	12.27	9.39	12.00	8.78	13.91	8.97
2					---	---	12.46	9.41	---	8.63	13.79	8.26
3					---	---	---	9.20	12.42	8.52	13.98	7.91
4					---	---	12.44	9.15	12.55	8.15	14.05	7.53
5					---	---	12.33	8.82	12.65	7.99	14.02	7.36
6					---	---	12.39	8.88	12.69	7.70	13.63	7.82
7					---	---	12.56	8.83	13.07	7.92	13.30	8.29
8					---	---	12.34	8.75	13.16	7.94	13.04	9.16
9					---	---	12.52	8.67	12.80	7.77	13.67	---
10					---	---	12.78	8.77	12.20	---	13.05	10.29
11					---	---	12.53	8.58	12.03	8.64	12.69	10.03
12					---	---	12.08	---	11.87	9.26	12.84	9.53
13					---	---	11.60	8.40	11.75	9.22	13.34	8.98
14					---	---	11.45	8.47	12.08	9.23	13.72	8.14
15					---	---	11.56	8.83	12.70	8.88	---	7.14
16					---	---	11.78	8.78	13.22	8.46	14.27	6.55
17					---	---	11.99	8.50	---	7.70	14.45	6.24
18					---	---	12.34	8.27	13.95	7.45	14.46	6.24
19					---	---	---	7.93	14.34	7.12	13.73	6.74
20					---	---	13.35	7.83	14.60	6.93	13.45	7.80
21					---	---	14.05	7.89	14.35	6.94	13.00	8.64
22					---	---	14.37	7.83	13.68	7.22	13.12	---
23					13.74	8.37	14.24	7.64	13.40	8.13	12.84	10.03
24					13.78	8.31	13.75	7.71	13.46	---	12.30	10.18
25					13.73	8.12	13.10	---	12.55	9.68	12.29	10.26
26					13.08	---	12.54	7.88	11.96	9.82	12.93	10.21
27					12.41	8.12	11.83	8.58	11.93	9.79	12.88	9.48
28					11.96	8.08	11.56	9.12	12.07	9.63	13.16	8.96
29					11.98	8.79	11.50	9.10	12.33	9.40	---	8.34
30					12.01	9.13	11.51	9.10	12.65	9.09	13.61	7.54
31					---	---	11.78	9.05	---	9.00	---	---
MEAN					12.84	8.42	12.45	8.60	12.80	8.45	13.41	8.45
YEAR	12.92	8.48										

Discharge at ungaged sites

Monthly records for the following four sites have been computed by routing methods described in USGS circular 550. Circular 550 contains monthly records for these sites for water year 1928-65, including monthly flows adjusted for major upstream storage. Figures given herein represent unadjusted flows, and are rated fair. Adjusted records are available from the Northwest Water Resources Data Center.

14144700. COLUMBIA RIVER AT VANCOUVER, WASH.--Lat 45°37'15", long 122°40'20", in NE¼NW¼.sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, 5.0 mi (8.0 km) upstream from Willamette River, and at mile 106.5 (171.4 km). Drainage area, 241,000 mi^2 (624,000 km^2) approximately. Records available, monthly discharges October 1927 to current year. Daily discharge for October 1963 to September 1969, published in annual data reports for Oregon, 1965-67, 1969.

14222870. COLUMBIA RIVER AT ST. HELENS, OREG.--Lat 45°51'58", long 122°47'00", Columbia County, Hydrologic Unit 17080003, center of channel at intersection of Township (4/5N) line and Oregon-Washington boundary, 0.6 mi (1.0 km) east of St. Helens, and at mile 86.0 (138.4 km). Drainage area, 253,900 mi^2 (657,600 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14245300. COLUMBIA RIVER AT LONGVIEW, WASH.--Lat 46°06'22", long 122°57'14", Cowlitz County, Hydrologic Unit 17080003, at Longview Bridge, 1.0 mi (1.6 km) south of Longview, 2.0 mi (3.2 km) downstream from Cowlitz River, and at mile 66.0 (106.2 km). Drainage area, 256,700 mi^2 (664,900 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14280000. COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OREG.--Lat 46°15', long 124°05', Clatsop County, Hydrologic Unit 17080006, center of channel at river mouth, due north from original end of south jetty, 12.3 mi (19.8 km) northwest of Astoria, and at mile 0 (0 km). Drainage area, 258,000 mi^2 (668,000 km^2), approximately. Records available, monthly discharge October 1927 to current year.

MONTHLY AND ANNUAL MEAN DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR 1978

OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
14144700 COLUMBIA RIVER AT VANCOUVER, WA												
100400	138600	199300	178500	182400	184000	244600	273400	245100	186400	126400	144800	183600
14222870 COLUMBIA RIVER AT SAINT HELENS, OR												
119500	206400	352800	259200	233900	206300	269900	302100	260000	196000	137100	165800	225700
14245300 COLUMBIA RIVER AT LONGVIEW, WA												
124700	229500	399900	276500	246600	213900	278600	309500	266700	200500	140800	171300	238200
14280000 COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OR												
128900	244400	428000	285300	256300	215300	286000	317000	270100	205400	141000	176900	246100

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain, but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1978

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Bear River basin					
12009500	Bear Branch near Naselle, Wa.	Lat 46°19'48", long 123°54'36", on line between secs.21 and 22, T.10 N., R.10 W., Pacific County, on right bank 3.4 mi (5.5 km) upstream from bridge on U.S. Highway 101 and 5.3 mi (8.5 km) southwest of Naselle.	11.7 (30.3)	1963-75‡, 1976-	12- 2-77	6.76	1,950
		Naselle River basin					
12010700	South Fork Naselle River near Naselle, Wa.	Lat 46°20'39", long 123°48'23", in SW¼SW¼ sec.16, T.10 N., R.9 W., Pacific County, on left bank 25 ft (8 m) downstream from private road bridge, 1,800 ft (550 m) downstream from Davis Creek, 1.4 mi (2.3 km) south of Naselle.	17.9 (46.4)	1964-75‡, 1976, 1977‡, 1978-	12-2-77	10.13	4,310
		North Nemah River basin					
12011200	Williams Creek near South Bend, Wa.	Lat 46°31'49", long 123°51'39", in NW¼NW¼ sec.13, T.12 N., R.10 W., Pacific County, on left bank 0.1 mi (0.2 km) upstream from unnamed tributary, 1.5 mi (2.4 km) upstream from mouth, and 10 mi (16 km) southwest of South Bend.	9.43 (24.42)	1964-74‡, 1975-76, 1977‡, 1978-	12- 2-77	6.18	1,570
		Willapa River basin					
12012000	Fork Creek near Lebam, Wa.	Lat 46°33'19", long 123°35'00", in SW¼NW¼ sec.5, T.12 N., R.7 N., Pacific County, on right bank 0.8 mi (1.3 km) upstream from mouth and 1.6 mi (2.6 km) southwest of Lebam.	20.4 (52.8)	1953-70‡, 1971-	12- 2-77 12-26-72	6.97 5.76*	2,720 *1,690
12014500	South Fork Willapa River near Raymond, Wa.	Lat 46°37'47", long 123°42'07", in SW¼NE¼ sec.8, T.13 N., R.8 W., Pacific County, on left bank 200 ft (61 m) upstream from logging bridge, 0.4 mi (0.6 km) downstream from Rue Creek, 4.0 mi (6.4 km) southeast of junction of U.S. Highway 101 and State Highway 6 at Raymond, and at mile 9.0 (14.5 km).	27.8 (72.0)	1953-71‡, 1972-76, 1978-	12- 2-77	9.02	3,400
		Smith Creek basin					
12015100 Raymond,	Clearwater Creek near Raymond, Wa.	Lat 46°44'59", long 123°45'59", on line between secs.26 and 35, T.15 N., R.9 W., Pacific County, on right bank 40 ft (12 m) downstream from road crossing, 0.7 mi (1.1 km) upstream from mouth, and 4.5 mi (7.2 km) northwest of Raymond.	3.98 (10.31)	1964-75‡, 1976-	12- 2-77	4.13	625
		North River basin					
12017000	North River near Raymond, Wa.	Lat 46°48'27", long 123°50'58", in SE¼SW¼ sec.6, T.15 N., R.9 W., Grays Harbor County, on left bank 1.2 mi (1.8 km) upstream from lower Salmon Creek, 10 mi (16.1 km) northwest of Raymond, and at mi 6.9 (11.1 km).	219 (567)	1927-77‡, 1978-	12- 3-77	11.09	13,400
		Chehalis River basin					
12020500	Elk Creek near Doty, Wa.	Lat 46°37'42", long 123°19'50", in SE¼NE¼ sec.8, T.13 N., R.5 W., Lewis County, on right bank 0.5 mi (0.8 km) upstream from Nine Creek, 1.0 mi (1.6 km) upstream from Deer Dreek, 2.6 mi (4.2 km) west of Doty and at mile 2.5 (4.0 km).	46.6 (121)	1944-50‡, 1952-67, 1968-70‡, 1971-72, 1974-	12- 2-77	12.82	4,600
12024000	South Fork Newaukum River near Onalaska, Wa.	Lat 46°34'34", long 122°40'58", on south line of SE¼ sec.28, T.13 N., R.1 E., Lewis County, on right bank on upstream side of county road bridge, 1.0 mi (1.6 km) upstream from Lost Creek 1.7 mi (2.7 km) east of Onalaska, and at mile 22.8 (36.7 km).	42.4 (110)	1945-48‡, 1958-71‡, 1972-76, 1978-	12- 2-77	9.66	4,310
12025300	Salzer Creek near Centralia, Wa.	Lat 46°41'31", long 122°54'26", in NE¼NE¼ sec.22, T.14 N., R.2 W., Lewis County, on right bank at downstream side of highway bridge, 500 ft (152 m) downstream from unnamed tributary, 2.4 mi (3.9 km) east of KELA Radio Tower in Centralia, and at mile 3.9 (6.3 km).	12.6 (32.6)	1969-71‡, 1972-	12- 2-77	7.78	311
12032500	Cloquallum Creek at Elma, Wa.	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, on right bank 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, and at mile 1.9 (3.1 km).	64.9 (168)	1942-43‡, 1944-72‡, 1973-	12- 2-77	11.10	4,890

‡ Operated as continuous-record station.
* Revised.

Annual maximum discharge at crest-stage partial-record stations during water year 1978

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharg (cfs)
		Quillayute River basin					
12042900	Grader Creek near Forks, Wa.	Lat 47°55'40", long 124°24'25", in SW¼ sec.17, T.28 N., R.13 W., Clallam County, at U.S. Highway 101, 2 mi (3.2 km) southwest of Forks.	1.67 (4.33)	1950-	11- 1-77	21.11	355
		Hoko River basin					
12043300	Hoko River near Sekiu, Wa.	Lat 48°14'30", long 124°22'57", in NE¼SW¼ sec.28, T.32 N., R.13 W., Clallam County, on right bank 2.2 mi (3.5 km) upstream from Little Hoko River and 4.0 mi (6.4 km) southwest of Sekiu.	51.2 (132.6)	1962-74‡, 1975-	11-25-77	9.11	5,950
		East Twin River basin					
12043430	East Twin River near Pyst, Wa.	Lat 48°09'49", long 123°56'33", in NW¼SW¼ sec.24, T.31 N., R.10 W., Clallam County, on right bank on downstream side of bridge on State Highway 112, 1,300 ft (396 m) upstream from mouth, and 8.4 mi (13.5 m) southeast of Pysht.	14.0 (36.3)	1962-72‡, 1973-	12- 2-77	5.39	1,140
		Morse Creek basin					
12047300	Morse Creek near Port Angeles, Wa.	Lat 48°02'16", long 123°20'57", in SW¼NE¼ sec.5, T.29 N., R.5 W., Clallam County, on right bank at steel foot bridge, 1,000 ft (305 m) downstream from Port Angeles diversion dam, 6.4 mi (10.3 km) upstream from mouth, and 6.8 mi (10.9 km) southeast of ferry terminal in Port Angeles.	46.6 (120.7)	1967-76‡, 1977-	11- 1-77	4.99	914
		Snow Creek basin					
12050500	Snow Creek near Maynard, Wa.	Lat 47°56'25", long 122°53'12", in NE¼NE¼ sec.11, T.28 N., R.2 W., Jefferson County, on right bank 1,800 ft (549 m) upstream from Andrews Creek, 3.2 mi (5.1 km) south of Uncas, and 4.0 mi (6.4 km) south of Maynard.	11.2 (29.0)	1952-72‡, 1973-	12- 2-77	2.24	61
		Hamma Hamma River basin					
12054500	Hamma Hamma River near Eldon, Wa.	Lat 47°35'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on left bank 0.3 mi (0.5 km) downstream from Watson Creek, 4.6 mi (7.4 km) northwest of Eldon, and at mile 6.2 (10.0 km).	51.3 (133)	1952-71‡, 1972-	9- 9-78	5.42	4,280
12054600	Jefferson Creek near Eldon, Wa.	Lat 47°35'00", long 123°06'18", in SE¼SE¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on right bank 0.2 mi (0.3 km) upstream from mouth and 4.0 mi (6.4 km) northwest of Eldon.	21.6 (55.9)	1958-71‡, 1972-	11- 1-77	7.88	2,300
		Skokomish River basin					
12058000	Deer Meadow Creek near Hoodsport, Wa.	Lat 47°24'16", long 123°13'16", in NW¼NW¼ sec.8, T.22 N., R.4 W., Mason County, on left bank 0.5 mi (0.8 km) west of Hoodsport.	1.83 (4.74)	1950-73‡, 1974-	11- 1-77	1.82	101
12059800	South Fork Skokomish River near Hoodsport, Wa.	Lat 47°26'45", long 123°24'54", in NW¼ sec.35, T.23 N., R.6 W., Mason County, Olympic National Forest, on left bank 100 ft (30 m) downstream from Pine Creek and 13.1 mi (21.1 km) west of Hoodsport.	26.0 (67.3)	1964-70‡, 1972-	11- 1-77	7.25	5,100
		Tahuya River basin					
12065500	Gold Creek near Bremerton, Wa.	Lat 47°33'20", long 122°48'35", in NE¼SW¼ sec.21, T.24 N., R.1 W., Kitsap County, on right bank 1.2 mi (1.9 km) upstream from mouth and 8.4 mi (13.5 km) west of Olympic College in Bremerton.	1.51 (3.91)	1946-70‡, 1972-	11-11-77	3.84	161
		Dewatto River basin					
12068500	Dewatto River near Dewatto, Wa.	Lat 47°28'10", long 123°01'33", in NE¼SW¼ sec.23, T.23 N., R.3 W., Mason County, on right bank 400 ft (122 m) downstream from highway bridge, 2.0 mi (3.2 km) upstream from mouth, and 2.2 mi (3.5 km) northeast of Dewatto.	18.6 (47.7)	1947-54‡, 1955-57, 1958-74‡, 1975-	11-11-77	3.98	940

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1978

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis- charg (cfs)
		Chico Creek basin					
12072000	Chico Creek near Bremerton, Wa.	Lat 47°35'28", long 122°42'29", in NE¼NW¼ sec.8, T.24 N., R.1 E., Kitsap County, on left bank at highway crossing, 0.5 mi (0.8 km) downstream from Dickerson Creek, and 3.7 mi (6.0 km) northwest of Olympic College in Bremerton.	15.3 (39.6)	1947-50‡, 1961-74‡, 1975-	12-11-77	3.58	402
		Goldsborough Creek basin					
12076500	Goldsborough Creek near Shelton, Wa.	Lat 47°12'56", long 123°10'52", in NW¼NW¼ sec.22, T.20 N., R.4 W., Mason County, on right bank 100 ft (30 m) upstream from road bridge, 3.8 mi (6.1 km) west of Shelton, and 5.5 mi (8.8 km) upstream from mouth.	39.3 (102)	1952-71‡, 1972-	12- 2-77	5.24	715
		Kennedy Creek basin					
12078400	Kennedy Creek near Kamilche, Wa.	Lat 47°04'37", long 123°07'33", in SW¼NE¼ sec.1, T.18 N., R.4 W., Mason County, on left bank 100 ft (30 m) upstream from Kennedy Falls, 2.2 mi (3.5 km) upstream from mouth at Oyster Day, and 3.9 mi (6.3 km) south of Kamilche.	17.4 (45.1)	1961-74‡, 1972-74, 1976-	12-11-77	4.50	1,380
		Deschutes River basin					
12079000	Deschutes River near Rainier, Wa.	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, on right bank 75 ft (23 m) upstream from county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8 (232.6)	1949-75‡, 1976-	12- 2-77	15.21	7,360
		McAllister Creek basin					
12081300	Eaton Creek near Yelm, Wa.	Lat 46°58'05", long 122°43'30", in S½ sec.7, T.17 N., R.1 E., Thurston County, at county road, 6 mi (9.6 km) northwest of Yelm.	2.28 (5.91)	1960-	12- 2-77	5.04	25
		Judd Creek basin					
12091700	Judd Creek near Burton, Wa.	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, on right bank at upstream side of culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41 (11.42)	1968-75‡, 1976-	12- 2-77	4.34	a94
		Puyallup River basin					
12095000	South Prairie Creek at South Prairie, Wa.	Lat 47°08'23", long 122°05'28", in NE¼NW¼ sec.18, T.19 N., R.6 E., Pierce County, on left bank 30 ft (9 m) downstream from railroad bridge, 200 ft (61 m) upstream from bridge on State Highway 162, 0.3 mi (0.5 km) east of South Prairie and at mile 5.9 (9.5 km).	79.5 (206)	1950-71‡, 1972-	12- 2-77	8.64	5,590
		Lake Washington basin					
12115300	Green Point Creek near Cedar Falls, Wa.	Lat 47°23'20", long 121°40'30", in SE¼ sec.17, T.22 N., R.9 E., King County, at road crossing, near mouth, 5 mi (8.0 km) southeast of Cedar Falls.	0.89 (2.31)	1957-	12- 2-77	15.21	114
12119700	Coal Creek near Bellevue, Wa.	Lat 47°34'00", long 122°10'45", in NW¼SW¼ sec.16, T.24 N., R.5 E., King County, 0.8 mi (1.3 km) upstream from mouth and 3 mi (4.8 km) south of Bellevue.	6.80 (17.6)	1964-68‡, 1969-	12-11-77	2.62	139
		Snohomish River basin					
12141000	Woods Creek near Monroe, Wa.	Lat 47°52'08", long 121°55'31", in NW¼SW¼ sec.33, T.28 N., R.7 E., Snohomish County, on right bank 0.4 mi (0.6 km) downstream from West Fork, 2.4 mi (3.9 km) northeast of Monroe, and at mile 3.1 (5.0 km).	56.4 (146)	1947-71‡, 1972-	12- 2-77	6.55	2,200
12142300	Hancock Creek near Snoqualmie, Wa.	Lat 47°34'21", long 121°41'12", in SE¼SE¼ sec.8, T.24 N., R.9 E., King County, on left bank 300 ft (91 m) downstream from Lake Hancock outlet, 1.5 mi (2.4 km) upstream from mouth, and 7.2 mi (11.6 km) northeast of Snoqualmie.	7.67 (19.9)	1965-71‡, 1972-	12- 2-77	2.85	535
12143000	North Fork Snoqualmie River near North Bend, Wa.(discontinued)	Lat 47°32'15", long 121°44'26", in SW¼NE¼ sec.26, T.24 N., R.8 E., King County, on right bank 3.4 mi (5.5 km) northeast of North Bend and at mile 2.2 (3.5 km).	95.7 (248)	1908-26‡, 1930-38‡, 1961-71‡, 1972-	12- 2-77	10.89	15,200

‡ Operated as continuous-record station.

a The annual minimum discharge was determined to be 1.1 ft^3/s on Aug. 7, 1978 from recorded gage height and stage-discharge relation rating.

Annual maximum discharge at crest-stage partial-record stations during water year 1978

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Snohomish River basin--Continued					
12144000	South Fork Snoqualmie River at North Bend, Wa.	Lat 47°29'18", long 121°47'03", in SW¼SE¼ sec.9, T.23 N., R.8 E., King County, on left bank 0.5 (0.8 km) south of North Bend and 2.8 mi (4.5 km) upstream from mouth.	81.7 (211.6)	1907-26‡, 1929-38‡, 1945-50‡, 1961-74‡, 1975-	12- 2-77	12.58	12,400
12146000	Patterson Creek near Fall City, Wa.	Lat 47°34'52", long 121°56'23", in SW¼NE¼ sec.8, T.24 N., R.7 E., King County, on left bank 150 ft (46 m) upstream from private road bridge 2.6 mi (4.2 km) northwest of Fall City, and at mile 1.9 (3.1 km).	15.5 (40.1)	1948-50‡, 1956-71‡, 1972-	12-15-77	4.68	187
12147000	Griffin Creek near Carnation, Wa.	Lat 47°36'58", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi (0.3 km) upstream from bridge on State Highway 203, 2.3 mi (3.7 km) south of Carnation, and at mile 0.9 (1.4 km).	17.1 (44.3)	1946-70‡, 1972-	12-15-77	3.40	270
12152500	Pilchuck River near Granite Falls, Wa.	Lat 48°03'15", long 121°57'25", in SE¼ sec.30, T.30 N., R.7 E., Snohomish County, on right bank 200 ft above county road bridge and 2 mi (3.2 km) southeast of Granite Falls.	54.4 (141)	1944-57‡, 1958-	12- 2-77	9.12	7,440
		Stillaguamish River basin					
12168500	Pilchuck Creek near Bryant, Wa.	Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, on right bank 500 ft (152 m) upstream from bridge on State Highway 9, 1.8 mi (2.9 km) north of Bryant, and at mile 6.4 (10.3 km).	52.0 (134.7)	1929-31‡, 1950-75‡, 1976-	12- 2-77	8.55	7,440
		Skagit River basin					
12189400	Sauk River tributary near Darrington, Wa.	Lat 48°20'30", long 121°33'00", in SE¼ sec.18, T.33 N., R.10 E., Skagit County, at Darrington-Concrete road, 6.5 mi (10.5 km) northeast of Darrington.	1.30 (3.37)	1951-70, 1978-	11- 1-77	74.92	92
12196000	Alder Creek near Hamilton, Wa.	Lat 48°31'42", long 121°56'58", in NW¼NE¼ sec.18, T.35 N., R.7 E., Skagit County, on left bank 3 ft (1 m) downstream from logging road culvert, 0.3 mi (0.5 km) upstream from bridge on State Highway 20, 2.0 mi (3.2 km) east of Hamilton and at mile 0.8 (1.3 km).	10.7 (27.7)	1944-71‡, 1972-	12- 2-77	12.19	536
12196200	Day Creek below Day Lake, near Lyman, Wa.	Lat 48°24'32", long 121°58'47", in SE¼NW¼ sec.25, T.34 N., R.6 E., Skagit County, on right bank 1,000 ft (305 m) downstream from outlet of Day Lake, 8.9 mi (14.3 km) southeast of Lyman, and at mile 10.4 (16.7 km).	6.56 (16.99)	1963-71‡, 1973-	12- 2-77	5.25	676
12199800	East Fork Nookachamps Creek near Big Lake, Wa.	Lat 48°24'50", long 122°09'25", in SW¼SW¼ sec.22, T.34 N., R.5 E., Skagit County, on right bank 3.0 mi (4.8 km) upstream from Walker Creek, 3.8 mi (6.1 km) northeast of town of Big Lake, and at mile 8.5 (13.7 km).	3.56 (9.22)	1961-71‡, 1972, 1974-	12- 2-77	5.22	676
		Samish River basin					
12201500	Samish River near Burlington, Wa.	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, on left bank 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8 (227)	1944-71‡, 1972-	12- 2-77	9.08	3,090
		Nooksack River basin					
12204400	Nooksack River tributary near Glacier, Wa.	Lat 48°54'30", long 121°48'20", in SW¼ sec.32, (unsurveyed), T.40 N., R.8 E., Whatcom County, at State Highway 542, 6.5 mi (10.5 km) east of Glacier.	1.15 (2.98)	1956-60, 1962-	12- 2-77	16.06	49
12209000	South Fork Nooksack River near Wickersham, Wa.	Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, on left bank 0.5 mi (0.8 km) upstream from Skookum Creek, 3.7 mi (6.0 km) east of Wickersham, and at mile 14.8 (23.8 km).	103 (267)	1934-77‡, 1978-	12- 2-77	10.11	11,400
12212800	Tenmile Creek tributary No. 2 near Bellingham, Wa.	Lat 48°50'35", long 122°24'30", 0.2 mi (0.3 km) north from center of sec.27, T.39 N., R.3 E., Whatcom County, at Starry Road, 2.8 mi (4.5 km) northwest of Noon, and 7 mi (11.3 km) northeast of Bellingham.	.24 (.62)	1956-	12-11-77	6.10	7.7

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1978

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharg (cfs)
		Wind River basin					
14128500	Wind River near Carson, Wa.	Lat 45°44'10", long 121°48'12", in SW¼NE¼ sec.21, T.3 N., R.8 E., Skamania County, on right bank 0.8 mi (1.3 km) upstream from Little Wind River, 1.0 mi (1.6 km) northeast of Carson, and 1.9 mi (3.1 km) upstream from mouth. Records include flow of Little Wind River.	225 (583)	1934-77‡, 1978-	12-13-77	19.33	31,600
		Groeneveld Creek basin					
14144600	Groeneveld Creek near Camas, Wa.	Lat 45°35'10", long 122°27'28", sec.41, T.1 N., R.3 E., Clark County, at private road 15 ft (5 m) east of county road, 0.4 mi (0.6 km) above mouth, and 2.5 mi (4.0 km) west of Camas city center.	0.51 (1.32)	1958-	12-13-77	13.83	80
		Lake River basin					
14212000	Salmon Creek near Battle Ground, Wa.	Lat 45°46'26", long 122°26'40", in NE¼SW¼ sec.4, T.3 N., R.3 E., Clark County, on left bank 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 m) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3 (47.4)	1944-75‡, 1976-	12- 2-77	4.86	2,600
		Lewis River basin					
14213500	Big Creek below Skookum Meadow near Trout Lake, Wa.	Lat 46°05'36", long 121°51'50", Skamania County, Gifford Pinchot National Forest 40 ft (12 m) upstream from forest service road, just downstream from Skookum Meadow, 3 mi (4.8 km) upstream from mouth and 17 mi (27.4 km) northwest of Trout Lake.	13.2 (34.2)	1928-31‡, 1956-70‡, 1971-	12- 2-77	5.60	264
		Kalama River basin					
14222980	Kalama River below falls, near Cougar, Wa.	Lat 46°06'25", long 122°21'33", in SE¼NW¼ sec.7, T.7 N., R.4 E., Cowlitz County, on left bank 50 ft (15 m) downstream from bridge, 0.4 mi (0.6 km) downstream from falls, and 4.7 mi (7.6 km) northwest of Cougar.	37.4 (96.9)	1970-71‡, 1972-76, 1978-	12- 2-77	6.34	2,100
14223500	Kalama River below Italian Creek, near Kalama, Wa.	Lat 46°02'42", long 122°48'51", in NE¼SW¼ sec.33, T.7 N., R.1 W., Cowlitz County, on right bank 2.8 mi (4.5 km) northeast of Kalama, 5.7 mi (9.2 km) downstream from Italian Creek, and at mile 4.2 (6.8 km).	198 (513)	1946-75‡, 1976-	12- 2-77	15.23	16,900
		Cowlitz River basin					
14226900	Skate Creek tributary No. 2 near Packwood, Wa.	Lat 46°40'30", long 121°45'10", in NE¼ sec.26, T.14 N., R.8 E., Lewis County, at Skate Creek road 6 mi (9.7 km) northwest of Packwood.	1.82 (4.71)	1959-75, 1978-			
14235500	West Fork Tilton River near Morton, Wa.	Lat 46°36'40", long 122°14'36", in NE¼SE¼ sec.13, T.13 N., R.4 E., Lewis County, on left bank 0.9 mi (1.4 km) upstream from mouth and 3.8 mi (6.1 km) northeast of Morton.	16.4 (42.5)	1951-71‡, 1972-	12- 2-77	6.28	3,130
14239000	Salmon Creek near Toledo, Wa.	Lat 46°24'50", long 122°49'15", in NW¼NW¼ sec.28, T.11 N., R.1 W., Lewis County, on right bank 0.2 mi (0.3 km) downstream from Little Salmon Creek, 2.2 mi (3.5 km) southeast of Toledo, and at mile 3.3 (5.3 km).	77.6 (201)	1962-71‡, 1972-	12- 2-77	12.70	6,920
		Elochoman River basin					
14247500	Elochoman River near Cathlamet, Wa.	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, on right bank 125 ft (38 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8 (170)	1941-71‡, 1972-	12- 2-77	13.60	8,900
		Jim Crow Creek basin					
14248200	Jim Crow Creek near Grays River, Wa.	Lat 46°16'37", long 123°33'37", in NE¼SW¼ sec.9, T.9 N., R.7 W., Wahkiacum County, on left bank 600 ft (180 m) downstream from logging bridge, 900 ft (270 m) upstream from Fink Creek, 1.5 mi (2.4 km) upstream from mouth, and 6.0 mi (9.7 km) southeast of the town of Grays River.	5.48 (14.19)	1964-74‡, 1975-	12- 2-77	6.45	962
		Grays River basin					
14249000	Grays River above South Fork, near Grays River, Wa.	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N., R.6 W., Pacific County, on right bank 500 ft (152 m) upstream from the South Fork, 6.8 mi (10.9 km) northeast of town of Grays River and at mile 17.8 (28.6 km).	39.9 (103.3)	1956-75‡, 1976-	12- 2-77	10.32	7,240

‡ Operated as continuous-record station.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Naselle River basin				
12010700 South Fork Naselle River	Naselle River	Lat 46°20'39", long 123°48'23", in SW¼SW¼ sec.16 T.10 N., R.9 W., Pacific County, 25 ft (8 m) downstream from private road bridge, 1,800 ft (550 m) downstream from Davis Creek, 1.4 mi (2.3 km) south of Naselle.	17.9	1953, 1963, 1964-75‡, 1976a, 1976, 1977‡, 1978a	10-13-77	28.9
		North Nemah River basin				
12011000 North Nemah River	Willapa Bay	Lat 46°29'29", long 123°49'59", in SE¼ sec.30, T.12 N., R.9 W., Pacific County, 600 ft (183 m) downstream from Finn Creek, 5 mi (8.04 km) upstream from mouth, and 12 mi (19.3 km) south of South Bend.	18.0	1946-54‡, 1955-58a, 1960-61a, 1964-68‡, 1971, 1977‡	10-13-77	28.6
12011200 Williams Creek	North Nemah River	Lat 46°31'49", long 123°51'39", in NW¼NW¼ sec.13, T.12 N., R.10 W., Pacific County, 0.1 mi (0.2 km) upstream from unnamed tributary, 1.5 mi (2.4 km) upstream from mouth, and 10 mi (16 km) southwest of South Bend.	9.43	1963, 1964-74‡, 1975-76a, 1977‡, 1978a	10-13-77	20.3
		Willapa River basin				
12011500 Willapa River	Willapa Bay	Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, 0.2 mi (0.3 km) downstream from State Highway 6 bridge, 0.5 mi (0.8 km) west of Lebam, and at mile 33.9 (54.5 km).	41.4	1948-71‡, 1972-74a	7-13-77 10-12-77 1-10-78 2-14-78 4-26-78 7-12-78 9-20-78	18.5 28.4 275 201 192 16.5 42.0
12012000 Fork Creek	Willapa River	Lat 46°33'19", long 123°35'00", in SW¼NW¼ sec.5, T.12 N., R.7 N., Pacific County, 0.8 mi (1.3 km) upstream from mouth and 1.6 mi (2.6 km) southwest of Lebam.	20.4	1953-70‡, 1971-78a	4-26-78	130
12014500 South Fork Willapa River	Do.....	Lat 46°37'47", long 123°42'07", in SW¼NE¼ sec.8, T.13 N., R.8 W., Pacific County, on left bank 200 ft (61 m) upstream from logging bridge, 0.4 mi (0.6 km) downstream from Rue Creek, 4.0 mi (6.4 km) southeast of junction of U.S. Highway 101 and State Highway 6 at Raymond, and at mile 9.0 (14.5 km).	27.8	1953-71‡, 1972-76a, 1973, 1978 a	4-25-78 5-23-78	133 89.2
		Smith Creek basin				
12015100 Clearwater Creek	Smith Creek	Lat 46°44'59", long 123°45'59", on line between secs.26 and 35, T.15 N., R.9 W., Pacific County, 40 ft (12 m) downstream from road crossing, 0.7 mi (1.1 km) upstream from mouth, and 4.5 mi (7.2 km) northwest of Raymond.	3.98	1953, 1963, 1964-75‡, 1976, 1976-78a	7-11-78	5.75
		North River basin				
12017000 North River	Willapa Bay	Lat 46°48'27", long 123°50'58", in SE¼SW¼ sec.6, T.15 N., R.9 W., Grays Harbor County, 1.2 mi (1.8 km) upstream from lower Salmon Creek, 10 mi (16.1 km) northwest of Raymond, and at mile 6.9 (11.1 km).	219	1927-77‡, 1978a	10-12-77	245
		Minor basins between North and Chehalis River basins				
12017315 Cannery Slough tributary	Willapa Bay	Lat 46°43'44", long 124°02'17", in SW¼NW¼ sec.3, T.14 N., R.11 W., Pacific County, 150 ft (46 m) upstream from State Highway 105, and 3.1 mi (5.0 km) northeast of Tokeland.	---	----	2-23-78 4-25-78 5-18-78 7-12-78 8- 1-78	0.90 .90 .78 .63 .57
12017330 Pacific County Drainage Ditch No. 1	Do.....	Lat 46°44'08", long 124°03'56", in NE¼NE¼ sec.5, T.14 N., R.11 W., Pacific County, at Smith-Anderson Road, 4.1 mi (6.6 km) northeast of Tokeland.	---	----	2-24-78 4-25-78 7-12-78 9-20-78	13.7 17.3 5.01 11.8
		Chehalis River basin				
12020500 Elk Creek	Chehalis River	Lat 46°37'42", long 123°19'50", in SE¼NE¼ sec.8, T.13 N., R.5 W., Lewis County, 0.5 mi (0.8 km) upstream from Nine Creek, 1.0 mi (1.6 km) upstream Deer Creek, 2.6 mi (4.2 km) west of Doty and at mile 2.5 (4.0 km).	46.6	1942-50‡, 1951, 1952-67a, 1967-70‡, 1971, 1971-72a, 1973-74, 1974-78a	7-13-78	24.7

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Chehalis River basin--Continued				
12020565 Chehalis River	Grays Harbor	Lat 46°37'55", long 123°14'59", in NE¼ sec.12, T.13 N., R.4 W., Lewis County, at Chandler Road bridge, 1.0 mi (1.6 km) west of Rainbow Falls State Park bridge, 1.3 mi (2.1 km) east of Doty, and at mile 98.0 (158 km).	---	---	10- 6-77 1-12-78 2-15-78 4-26-78 7-13-78 9-20-78	181 1,170 816 783 95.3 223
12022250 Chehalis River	Do......	Lat 46°37'40", long 123°03'35", in SW¼NE¼ sec.9, T.13 N., R.3 W., Lewis County, at State Highway 6 bridge at Adna and at mile 81.3 (131 km).	383	1972, 1975-77	7-11-78 8- 1-78	174 99.1
12024000 South Fork Newaukum River	Newaukum River	Lat 46°34'34", long 122°40'58", on south line of SE¼ sec.28, T.13 N., R.1 E., Lewis County, at upstream side of county road bridge, 1.0 mi (1.6 km) upstream from Lost Creek, 1.7 mi (2.7 km) east of Onalaska, and at mile 22.8 (36.7 km).	42.4	1945-48‡, 1958-71‡, 1972-76a, 1978a	6-14-78	123
12024100 South Fork Newaukum River	Do......	Lat 46°36'14", long 122°51'15", in NW¼NE¼ sec.19, T.13 N., R.1 W., Lewis County, at county bridge, 0.3 mi (0.5 km) northeast of Forest, 0.2 mi (0.3 km) upstream from North Fork Newaukum River, and at mile 11.1 (17.9 km).	66.2	1976-77	5-31-78 8- 1-78	143 35.6
12024500 North Fork Newaukum River	Do......	Lat 46°39'17", long 122°46'45", in NW¼SW¼ sec.35, T.14 N., R.1 W., Lewis County, at county road, 1.4 mi (2.3 km) upstream from Lucas Creek, 5.5 mi (8.8 km) northeast of Forest, and at mile 6.6 (10.6 km).	31.5	1942-43, 1944-45‡, 1957-66‡, 1967, 1976-77	5-31-78 8- 1-78	49.7 17.8
12025300 Salzer Creek	Chehalis River	Lat 46°41'31", long 122°54'26", in NE¼NE¼ sec.22, T.14 N., R.2 W., Lewis County, at highway bridge, 500 ft (152 m) downstream from unnamed tributary, 2.4 mi (3.9 km) east of KELA Radio Tower in Centralia, and at mile 3.9 (6.3 km).	12.6	1969-71‡, 1972-78a	6-13-78	3.05
12025500 Chehalis River	Grays Harbor	Lat 46°42'45", long 122°58'38", in NE¼SE¼ sec.7, T.14 N., R.2 W., Lewis County, at Mellon Street Bridge on west edge of Centralia, 0.6 mi (1.0 km) upstream from Skookumchuck River, and at mile 67.5 (108.6 km).	653	1910-11	11- 3-77 1-16-78 2-15-78 4-27-78 6- 7-78 9-26-78	5,890 4,360 2,340 2,140 429 1,240
12029500 Garrard Creek	Chehalis River	Lat 46°48'34", long 123°16'15", in SW¼SE¼ sec.2, T.15 N., R.5 W., Grays Harbor County, at county road, 2.8 mi (4.5 km) southwest of Oakville, and at mile 2.6 (4.2 km).	26.5	1942-43, 1944-45‡, 1958, 1961, 1976-77	5-31-78 7-31-78	30.5 3.86
12032500 Cloquallum Creek	Do......	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, at mile 1.9 (3.1 km).	64.9	1942-43‡, 1944-72‡, 1973-78a, 1974-77	5-30-78 7-31-78	145 35.9
12035002 Chehalis River	Grays Harbor	Lat 46°57'53", long 123°31'12", in NW¼NE¼ sec.14, T.17 N., R.7 W., Grays Harbor County, 2.2 mi (3.5 km) downstream from Satsop River, 3.2 mi (5.1 km) southwest of Satsop, and at mile 18.0 (29.0 km).	—	—	7-14-77 6-29-78 7-14-78 8- 3-78	1,070 1,480 1,110 859
12038005 Wishkah River	Chehalis River	Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor county, at Wishkah Road, 0.1 mi (0.2 km) upstream from East Fork, 1.0 mi (1.6 km) north of Aberdeen Gardens, and at mile 12.3 (19.8 km).	59.9	1956, 1962-64, 1966, 1976-77	5-30-78 7-31-78	268 58.7
		Hoquiam River basin				
12038660 East Fork Hoquiam River	Hoquiam River	Lat 47°03'32", long 123°50'04", in NW¼SW¼ sec.8, T.18 N., R.9 W., Grays Harbor County, 0.2 mi (0.3 km) upstream from Berryman Creek, 3.0 mi (4.8 km) west of Aberdeen Gardens, and at mile 7.3 (11.7 km).	25.8	1942-43, 1976-77	5-30-78 7-31-78	100 24.9
		Hoh River basin				
12041230 Chalaat Creek	Hoh River	Lat 47°44'33", long 124°24'58", in NW¼SW¼ sec.20, T.26 N., R.13 W., Jefferson County, Hoh Indian Reservation, at road crossing near treatment plant, 0.8 mi (1.3 km) upstream from mouth, and 9.9 mi (15.9 km) northwest of Kalaloch.	---	---	8-11-77 2-10-78 3-10-78 3-29-78 5-10-78 5-17-78 8-23-78	0.52 6.02 3.67 3.66 1.99 2.40 .84

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Hoh River basin--Continued				
12041234 Chalaat Creek	Hoh River	Lat 47°44'45", long 124°25'20", in SE¼NE¼ sec.19, T.26 N., R.13 W., Jefferson County, Hoh Indian Reservation, at road crossing near Community Center, 0.3 mi (0.5 km) upstream from mouth, and 10.2 mi (16.4 km) northwest of Kalaloch.	-----	-----	8-11-77 2-10-78 3-10-78 5-10-78 5-17-78	1.24 7.89 4.86 1.87 3.15
		Waatch River basin				
12043176 Waatch River	Mukkaw Bay (Pacific Ocean)	Lat 48°21'24", long 124°37'42", in NE¼SW¼ sec.15, T.33 N., R.15 W., Clallam County, 0.8 mi (1.3 km) southwest of Neah Bay.	10.7	1976-77	10-14-77 12-16-77 3- 3-78	9.98 123 12.3
		Village Creek basin				
12043186 Village Creek	Neah Bay	Lat 48°22'10", long 124°37'40", in NE¼SW¼ sec.10, T.33 N., R.15 W., Clallam County, at road crossing 0.3 mi (0.5 km) above mouth, and 0.3 mi (0.5 km) west of Neah Bay.	0.65	1976-77	10-14-77 12-15-77 3- 3-78	0.79 21.2 .75
		Skokomish River basin				
12059800 South Fork Skokomish River	Skokomish River	Lat 47°26'45", long 123°24'54", in NW¼ sec.35, T.23 N., R.6 W., Mason County, Olympic National Forest, 100 ft (30 m) downstream from Pine Creek, and 13.1 mi (12.1 km) west of Hoodsport.	26.0	1964-70‡, 1972-78a	5-22-78	195
		Chico Creek basin				
12072000 Chico Creek	Dyes Inlet	Lat 47°35'28", long 122°42'29", in NE¼NW¼ sec.8, T.24 N., R.1 E., Kitsap County, at highway crossing, 0.5 mi (0.8 km) downstream from Dickerson Creek, and 3.7 mi (6.0 km) northwest of Olympic College in Bremerton.	15.3	1947-50‡, 1961-74‡, 1975-78a 1977	5- 9-78	15.7
		Minor Stream tributary to Eld Inlet basin				
Allison Springs	Eld Inlet	Lat 47°02'37", long 122°59'06", in NE¼SW¼ sec.18, T.18 N., R.2 W., Thurston County, at spring outlet, 0.4 mi (0.6 km) west of McLane School, and 4.0 mi (6.4 km) west of Olympia.	-----	1977	10-25-77 2- 9-78 3-28-78 5-18-78 7-31-78 9-26-78	2.85 4.57 3.94 3.99 3.46 3.73
		Deschutes River basin				
Deschutes River	Budd Inlet	Lat 46°47'31", long 122°23'29", in SE¼SW¼ sec.11, T.15 N., R.3 E., Thurston County, 0.1 mi (0.2 km) upstream from mouth of Little Deschutes River, 4.6 mi (7.4 km) southwest of La Grande, and at river mile 43.5 (70.0 km).	23.1	1977	8-14-78	13.4
Little Deschutes River	Deschutes River	Lat 46°47'31", long 122°23'19", in SW¼SE¼ sec.11, T.15 N., R.3 E., Thurston County, 0.2 mi (0.3 km) upstream from mouth and 4.2 mi (6.8 km) southwest of La Grande.	7.89	1977	8-14-78	1.30
Thurston Creek	Do......	Lat 46°47'49", long 122°26'26", in NW¼SW¼ sec.9, T.15 N., R.3 E., Thurston County, 200 ft (61 m) upstream from Weyerhauser gage, 200 ft (61 m) upstream from logging road crossing and 6.5 mi (10.5 km) southwest of La Grande.	-----	1977	8-14-78	2.38
Johnson Creek	Do......	Lat 46°47'38", long 122°26'46", in SE¼SE¼ sec.8, T.15 N., R.3 E., Thurston County, at logging road crossing at Weyerhauser gage and 6.6 mi (10.6 km) southwest of La Grande.	-----	1977	8-14-78	.26
12078850 Deschutes River	Budd Inlet	Lat 46°47'44", long 122°27'22", in SE¼SW¼ sec.8, T.15 N., R.3 E., Thurston County, at private bridge at Trails End Estates, 1.0 mi (1.6 km) upstream from Mitchell Creek, 7.3 mi (11.7 km) southwest of La Grande.	44.1	1949-50, 1963, 1965-71, 1977	8-14-78	16.1
12078900 Mitchell Creek	Deschutes River	Lat 46°47'26", long 122°28'00", in NE¼NE¼ sec.18, T.15 N., R.3 E., Thurston County, at logging road crossing 0.2 mi (0.3 km) upstream from mouth, 7.7 mi (12.4 km) southwest of La Grande.	8.54	1963, 1965-71, 1977	8-14-78	2.51
Fall Creek	Do......	Lat 46°48'11", long 122°30'23", in SW¼NW¼ sec.12, T.15 N., R.2 E., Thurston County, at logging road crossing, 7.8 mi (12.6 km) southeast of Vail.	-----	1977	8-14-78	.29
Pipeline Creek	Do......	Lat 46°49'44", long 122°33'37", in center of sec. 33, T.16 N., R.2 E., Thurston County, at old logging road crossing and 4.8 mi (7.7 km) southeast of Vail.	-----	1977	8-14-78	.13

‡ Operated as continuous record station

a Operated as crst-stage station.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Deschutes River basin--Continued				
Lake Lawrence Outlet	Deschutes River	Lat 46°50'54", long 122°34'55", in NE¼NW¼ sec.29, T.16 N., R.2 E., Thurston County, at county road crossing, 0.1 mi (0.2 km) from Lake Lawrence and 5.8 mi (9.3 km) southeast of Rainier.	3.35	1974, 1977	8-14-78	0
Reichel Lake Outlet	Do.....	Lat 46°50'23", long 122°39'10", in NW¼SW¼ sec.26, T.16 N., R.1 E., Thurston County, at Vail Loop Road crossing 0.5 mi (0.8 km) southeast of Vail and 3.2 mi (5.1 km) downstream from Reichel Lake.	-----	1977	8-14-78	.77
12079000 Deschutes River	Budd Inlet	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, at county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8	1949-75‡, 1976-78a, 1976-77	1-13-78 3-16-78 5-24-78 7-20-78 8-14-78	447 181 113 47.3 36.7
12080010 Deschutes River	Do.....	Lat 47°00'42", long 122°54'07", in NW¼ Land Grant 60, T.18 N., R.2 W., Thurston County, at "E" Avenue Bridge in Tumwater, 0.2 mi (0.3 km) upstream from Capitol Boulevard and at mile 2.4 (3.9 km).	162	1971-72, 1975, 1977	10- 5-77 1-16-78 3-28-78 6- 7-78 7-31-78 9-26-78	114 681 442 163 101 209
		Nisqually River basin				
12090240 Nisqually River	Puget Sound	Lat 47°04'18", long 122°42'11", in SE¼ sec.38, T.18 N., R.1 E., Pierce County, at bridge on Interstate 5, 1.0 mi (1.6 km) north of Nisqually at river mile 2.4 (3.9 km).	712	1960, 1962, 1971-73, 1976	10-25-77 1-10-78 2-10-78 4-11-78 6- 1-78 8-16-78	1,060 3,570 2,480 1,160 1,260 1,030
		Judd Creek basin				
12091700 Judd Creek	Quartermaster Harbor	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, at culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41	1969-75‡, 1976-77a, 1976-78	3-16-78	3.92
		Puyallup River basin				
12097500 Greenwater River	White River	Lat 47°09'13", long 121°38'04", in NW¼NW¼ sec.11, T.19 N., R.9 E., Pierce County, 0.9 mi (1.4 km) east of Greenwater and 1.2 mi (1.9 km) upstream from mouth.	73.5	1911-12‡, 1929-77‡	10- 6-77	76.4
12101110 White River	Puyallup River	Lat 47°12'15", long 122°14'10", in NW¼SW¼ sec.24, T.20 N., R.4 E., Pierce County, at Main Street bridge on northwest edge of Sumner, at mile 0.7 (1.1 km).	494	1972	8- 4-77 10-17-77 1-10-78 2-10-78 4-11-78 6- 1-78 8-16-78	832 1,310 2,080 1,850 1,600 1,440 1,040
		Duwamish River basin				
12103400 Green River	Duwamish River	Lat 47°12'44", long 121°25'13", in NW¼ sec.21, T.20 N., R.11 E., King County, Snoqualmie National Forest, 0.8 mi (1.3 km) downstream from Intake Creek, 3.3 mi (5.3 km) east of Lester, and at mile 87.9 (141 km).	34.8	1967-77‡	10-11-77	34.7
12104000 Friday Creek	Green River	Lat 47°13'17", long 121°27'22", in SE¼NW¼ sec.18, T.20 N., R.11 E., King County, 0.4 mi (0.6 km) upstream from mouth and 1.9 mi (3.1 km) northeast of Lester.	4.67	1946-77‡	10-11-77	8.85
12108050 Clovercrest Outfall	Newaukum Creek	Lat 47°12'38", long 122°00'14", in SW¼NW¼ sec.23, T.20 N., R.6 E., King County, at road crossing, (Clovercrest subdivision) in Enumclaw.	0.26	1977	7-11-77 8-24-77 9-12-77 9-19-77 9-23-77 10-25-77 11-18-77 11-26-77 11-30-77 12- 6-77 1-10-78 2-14-78 3-17-78 4-10-78 4-17-78 6-13-78 8- 2-78	c.07 c.11 c.03 c.04 c5.10 .22 .18 .87 .47 4.66 .69 .05 .05 .03 .32 .11 0
12108450 Newaukum Creek tributary	Do......	Lat 47°15'12", long 122°01'34", in NE¼NW¼ sec.3, T.20 N., R.6 E., at 236 Ave. S.E. road crossing 3.8 mi (6.1 km) southwest of Black Diamond.	1.52	1977	7-11-77 8-24-77 9-12-77 9-23-77 10-25-77 11-18-77 11-26-77	c.16 c.15 c.08 c1.08 .71 1.43 7.10

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Duwamish River basin--Continued				
12108450 Newaukum Creek tributary (continued)	Newaukum Creek				11-29-77 11-30-77 12- 3-77 12- 6-77 1-10-78 2-14-78 3-17-78 4-17-78 5-12-78 6-13-78 8- 2-78	11.8 5.39 6.30 15.3 3.96 1.50 1.06 2.40 1.30 .63 .08
		Lake Washington basin				
Rock Creek	Cedar River	Lat 47°23'39", long 121°56'48", in SE¼NW¼ sec.17, T.22 N., R.7 E., King County, 500 ft (152 m) upstream from mouth and 1.8 mi (2.9 km) northeast of Landsburg.	---	1976	10- 3-77 11-28-77	9.30 47.9
		Snohomish River basin				
12131000 Beckler River	South Fork Skykomish River	Lat 47°44'24", long 121°19'15", in NW¼SW¼ sec.18, T.26 N., R.12 E., King County, at gaging station "near Skykomish," 0.2 mi (0.3 km) downstream from Eagle Creek, 2.6 mi (4.2 km) northeast of Skykomish.	96.5	1929-33‡, 1946-50‡, 1950-70a	1- 7-77	c270
South Fork Skykomish River	Skykomish River	Lat 47°42'39", long 121°21'35", in NW¼SW¼ sec.26, T.26 N., R.11 E., King County, at road crossing in Skykomish, and at river mile 65.6 (105.6 km).	243	1910	1-19-77 12- 2-77 12- 3-77 12- 8-77	c4,290 22.200 10,100 2,570
12132500 South Fork Skykomish River	Do.....	Lat 47°43'48", long 121°24'27", in SW¼NW¼ sec.21, T.26 N., R.11 E., King County, at county bridge (Money Creek campground), 0.9 mi (1.4 km) southeast of Grotto, at river mile 62.3 (100.2 km).	313	1910-12	9-29-76 12- 2-76 1-19-77 3-23-77 5-17-77 7-26-77 9-21-77 12- 2-77 12- 3-77	c544 c795 c5,270 c1,310 c1,420 c533 c1,510 25,400 12,100
12134000 North Fork Skykomish River	Do.....	Lat 47°49'10", long 121°33'10", in NW¼ sec.20, T.27 N., R.10 E., Snohomish county, at highway bridge.	146	1910-22‡, 1924, 1929-38‡, 1939, 1946-48‡, 1949, 1951	1-19-77 12- 2-77 4-21-78	c3,380 16,800 867
12137230 Sultan River	Do.....	Lat 47°58'47", long 121°34'25", in SE¼SW¼ sec.19, T.29 N., R.10 E., Snohomish County, at bridge, 0.4 mi (0.6 km) downstream from Elk Creek, 13.6 mi (21.9 km) northeast of Sultan, and at mile 22.4 (36.0 km).	---	1977	11-22-77 1-17-78 3-21-78 5-18-78 7-19-78	106 135 177 320 115
12137290 South Fork Sultan River	Do.....	Lat 47°56'52", long 121°37'33", in NE¼NF¼ sec.3, T.28 N., R.9 E., Snohomish County, at bridge, 10.5 mi (16.9 km) northeast of Sultan, and at mile 2.3 (3.7 km).	---	1977	11-21-77 1-18-78 3-22-78 5-18-78 7-20-78	53.0 52.1 97.4 136 33.1
12141000 Woods Creek	Do.....	Lat 47°52'08", long 121°55'31", in NW¼SW¼ sec.33, T.28 N., R.7 E., Snohomish County, on right bank 0.4 mi (0.6 km) downstream from West Fork 2.4 mi (3.9 km) northeast of Monroe, and at mile 3.1 (5.0 km).	56.4	1947-71‡, 1972-78a	7- 3-78	37.8
12141100 Skykomish River	Snohomish River	Lat 47°51'08", long 121°57'29", in NE¼NE¼ sec.12, T.27 N., R.6 E., Snohomish County, at State Highway 203 bridge, at south city limits of Monroe.	834	1922g, 1951g, 1955, 1958-67g 1959, 1967-74 1975-77	11-30-77 1-20-78 3-22-78 5-19-78 7-20-78	16,000 2,800 4,280 7,360 2,350
12142300 Hancock Creek	North Fork Snoqualmie River	Lat 47°34'21", long 121°41'12", in SE¼SE¼ sec.8, T.24 N., R.9 E., King County, on left bank 300 ft (91 m) downstream from Lake Hancock outlet, 1.5 mi (2.4 km) upstream from mouth, and 7.2 mi (11.6 km) northeast of Snoqualmie.	7.67	1965-71‡, 1972-78a	3-28-78 7- 7-78	80.7 16.8
12145000 Tokul Creek	Snoqualmie River	Lat 47°33'13", long 121°50'09", in SE¼NW¼ sec.19, T.24 N., R.8 E., King County, 200 ft (61 m) upstream from fish hatchery diversion, 600 ft (183 m) downstream from State Highway 522, 1.8 mi (2.9 km) northeast of Snoqualmie.	32.2	1907-14‡, 1926, 1927, 1929-31‡, 1945, 1957, 1959-61a, 1962-77	10- 6-77 12- 1-77 1-24-78 3-27-78 5-23-78 7-24-78	33.4 183 94.5 97.7 82.8 33.2

‡ Operated as continuous-record station,
a Operated as crest-stage gage.
c Not previously published.
g Stage only.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements: Date	Measurements: Discharge (cfs)
		Snohomish River basin--Continued				
12146000 Patterson Creek	Do......	Lat 47°34'52", long 121°56'23", in SW¼NE¼ sec.8, T.24 N., R.7 E., King County, on left bank 150 ft (46 m) upstream from private road bridge, 2.6 mi (4.2 km) northwest of Fall City, and at mile 1.9 (3.1 km).	15.5	1948-50‡, 1956-71‡, 1972-78a	5-24-78 6- 8-78 9- 6-78	16.5 9.93 13.7
12146500 Patterson Creek	Do......	Lat 47°35'15", long 121°55'40", on line between sec.4 and 9, T.24 N., R.7 E., King County, at county bridge, 0.8 mi (1.3 km) upstream from mouth and 2 mi (3.2 km) northwest of Fall City. (Formerly published as 0.8 (1.3 km) mi above mouth near Fall City.	b19.9	1945‡, 1957	5-24-78 6- 8-78 9- 6-78	18.7 10.9 16.9
12147000 Griffin Creek	Do......	Lat 47°36'58", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi (0.3 km) upstream from bridge on State Highway 203, 2.3 mi (3.7 km) south of Carnation, and at mile 0.9 (1.4 km).	17.1	1946-70‡, 1972-78a	5-23-78 6- 8-78 9- 6-78	24.1 8.33 12.3
12149500 Harris Creek	Do......	Lat 47°40'42", long 121°54'22", in NE¼SE¼ sec.4, T.25 N., R.7 E., King County, at State Highway 203 bridge, 1.7 mi (2.8 km) upstream from mouth, and 1.8 mi (2.9 km) north of Carnation. (Formerly published as near Tolt.)	b8.39	1945‡, 1957-58, 1973	5-23-78 6- 8-78 9- 6-78	13.6 6.07 5.54
12155400 Pilchuck River	Snohomish River	Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, at bridge on U.S. Highway No. 2, at east city limits of Snohomish, at mile 1.9 (3.1 km).	132	1971-74	8- 9-77 9-20-77 11-29-77 1-20-78 3-20-78 5-17-78 7-20-78	c58.8 c150 1,580 323 314 613 122
		Stillaguamish River basin				
12164510 South Fork Stillaguamish River	Stillaguamish River	Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, at State Highway 530 bridge near northeast corner of Arlington, 0.4 mi (0.6 km) upstream from the confluence with the North Fork Stillaguamish, at mile 18.2 (29.3 km).	255	1966, 1973-75	10-12-77 5- 9-78 5-16-78 7-12-78	579 961 3,070 554
12167700 Stillaguamish River	Port Susan	Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, at U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).	557	1975‡, 1976-77	11- 4-77 1-23-78 3- 8-78 4-19-78 7-12-78	4,400 3,410 5,010 3,090 1,220
12168500 Pilchuck Creek	Stillaguamish River	Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, on right bank 500 ft (152 m) upstream from bridge on State Highway 9, 1.8 mi (2.9 km) north of Bryant, and at mile 6.4 (10.3 km).	52.0	1929-31‡, 1950-75‡, 1976-78a	9-14-78	157
		Skagit River basin				
12196200 Day Creek	Skagit River	Lat 48°24'32", long 121°58'47", in SE¼NW¼ sec.25, T.34 N., R.6 E., Skagit County, on right bank 1,000 ft (305 m) downstream from outlet of Day Lake, 8.9 mi (14.3 km) southeast of Lyman, and at mile 10.4 (16.7 km).	6.56	1963-71‡, 1972-78a	9-13-78	55.1
12199800 East Fork Nookachamps Creek	Nookachamps Creek	Lat 48°24'50", long 122°09'25", in SW¼SW¼ sec.22, T.34 N., R.5 E., Skagit County, on right bank 3.0 mi (4.8 km) upstream from Walker Creek, 3.8 mi (6.1 km) northeast of town of Big Lake, and at mile 8.5 (13.7 km).	3.56	1961-71‡, 1972-78a	9-13-78	13.6
		Samish River basin				
12201500 Samish River	Samish Bay	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8	1944-71‡, 1972-77a, 1972-74, 1976-77	5-11-78 8-18-78	120 44.4
		Whatcom Creek basin				
12201950 Anderson Creek	Lake Whatcom	Lat 48°20'26", long 122°15'58", in NW¼NW¼ sec.26, T.37 N., R.4 E., Whatcom County, on right bank at upstream side of county bridge, 500 ft (152 m) upstream from mouth and Lake Whatcom, and 11.0 mi (17.7 km) southeast of Western Washington College in Bellingham.	4.13	1968-70‡, 1971-77a	8-16-78	97.3

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Minor basins between Klickitat and White Salmon Rivers						
Major Creek	Columbia River	Lat 45°42'54", long 121°21'03", in NW¼SE¼ sec.30, sec.30, T.3 N., R.12 E., Klickitat County, at State Route 14 road crossing, 0.4 mi (0.6 km) upstream from mouth and 5.5 mi (8.8 km) east of Bingen.	30.8	1977	6- 6-78 8-14-78	0.03 0
Catherine Creek	Do.....	Lat 45°42'38", long 121°21'30", in SW¼SW¼ sec.30, T.3 N , R.12 E., Klickitat County, at State Route 14 road crossing, 0.3 mi (0.5 km) upstream from mouth and 5.1 mi (8.2 km) east of Bingen.	3.55	1977	6- 6-78 8-14-78	0 0
White Salmon River basin						
Cascades Creek	White Salmon River	Lat 46°06'20", long 121°36'14", in SE¼SW¼ sec.7, T.7 N., R.10 E., Skamania County, Gifford Pinchot National Forest, at logging road (N712) crossing, 0.2 mi (0.3 km) upstream from mouth and 8.2 mi (13.2 km) northwest of Trout Lake.	16.4	1977	6- 6-78	100
Gotchen Creek	Do.....	Lat 46°01'44", long 121°31'21", in NE¼NW¼ sec.11, T.6 N., R.10 E., Klickitat County, at road crossing 2.2 mi (3.5 km) northeast of Trout Lake.	18.2	1977	6- 6-78	0
14121500 Trout Lake Creek	Do.....	Lat 46°00'15", long 121°32'18", in SE¼SW¼ sec.15, T.6 N., R.10 E., Klickitat County, 150 ft (46 m) upstream from road crossing, 2.0 mi (3.2 km) upstream from mouth, 0.6 mi (1.0 km) northwest of Trout Lake.	69.3	1909-12‡, 1913, 1959-60‡, 1973, 1977	6- 6-78	305
Gilmer Creek	Do.....	Lat 45°51'30", long 121°30'12", in SW¼SW¼ sec.1, T.4 N., R.10 E., Klickitat County, at old road crossing 0.6 mi (1.0 km) northeast of B-Z corner.	11.6	1909, 1977	6- 6-78	1.85
Rattlesnake Creek	Do.....	Lat 45°47'50", long 121°29'02", in NW¼NW¼ sec.31, T.4 N., R.11 E., Klickitat County, 50 ft (15 m) upstream from mouth at Husum.	55.7	1911, 1913, 1973, 1977	6- 6-78	6.49
Buck Creek	Do.....	Lat 45°46'53", long 121°30'54", in NW¼NE¼ sec.2, T.3 N., R.10 E., Skamania County, 100 ft (30 m) upstream from mouth, 1.8 mi (2.9 km) southwest of Husum.	13.9	1913, 1973, 1977	6- 6-78	11.6
Little White Salmon River basin						
Little White Salmon River	Columbia River	Lat 45°50'43", long 121°39'30", in NE¼SW¼ sec.10, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at N443 road crossing, 4.7 mi (7.6 km) northwest of Willard.	27.9	1977	6- 6-78	34.4
14124000 Little White Salmon River	Do.....	Lat 45°47'56", long 121°38'20", in SE¼SW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from Moss Creek, 1.3 mi (2.1 km) northwest of Willard.	39.2	1910, 1941-42, 1944-49‡, 1973, 1977	6- 6-78	47.9
14125500 Little White Salmon River	Do.....	Lat 45°43'25", long 121°37'58", in NE¼NE¼ sec.26, T.3 N., R.9 E., Skamania County, on left bank 1.5 mi (2.4 km) northeast of Cook, and at mile 1.6 (2.6 km).	134	1956-77‡	12-13-77	7,390
Lava Creek	Little White Salmon River	Lat 45°46'56", long 121°37'44", in SE¼SE¼ sec.35, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from mouth at Willard.	72.5b	1910, 1928-31, 1946, 1973, 1977	6- 6-78	136
Wind River basin						
Falls Creek	Wind River	Lat 45°54'24", long 121°56'15", in SE¼SE¼ sec.20, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 0.6 mi (1.0 km) upstream from mouth, 7 mi (11.3 km) northwest of Stabler.	----	1977	6- 6-78 8-14-78	63.2 19.4
Wind River	Columbia River	Lat 45°52'56", long 121°58'00", in NE¼SE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at Siouxon Road crossing (N 73) 1.5 mi (2.4 km) east of Government Mineral Springs, 5.7 mi (9.2 km) northwest of Stabler and at river mile 19.6 (31.5 km).	63.3	1977	8-14-78	28.5
Dry Creek	Wind River	Lat 45°52'50", long 121°58'36", in NW¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 1.0 mi (1.6 km) east of Government Mineral Springs and 5.9 mi (9.5 km) northwest of Stabler.	15.5	1977	6- 6-78 8-14-78	0 0

‡ Operated as continuous-record station.

b Approximately.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Wind River basin--Continued				
Trapper Creek	Wind River	Lat 45°52'47", long 121°58'50", in SE¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from N 511 road bridge, and 5.9 mi (9.5 km) northwest of Stabler.	11.6	1977	6- 6-78 8-14-78	29.0 5.13
14127000 Wind River	Columbia River	Lat 45°48'31", long 121°54'27", in NW¼NE¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30.5 m) downstream from county road bridge, 0.7 mi (1.1 km) upstream from Trout Creek, 7.1 mi (11.4 km) northwest of Carson, and at mile 11.5 (18.5 km).	108	1945-69‡, 1977	8-14-78	91.7
Trout Creek	Wind River	Lat 45°48'00", long 121°54'51", in NE¼SW¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from Martha Creek, 7.0 mi (11.3 km) northwest of Carson.	30.3	1944-48‡, 1973, 1977	6- 7-78	60.9
14128000 Panther Creek	Do.....	Lat 45°48'02", long 121°51'59", in SW¼SE¼ sec.25, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 2,000 ft (61.0 m) upstream from Cedar Creek, 5.9 mi (9.5 km) northwest of Carson.	30.1	1944-54‡, 1973, 1977	6- 7-78	86.0
Panther Creek	Do.....	Lat 45°46'17", long 121°50'51", in NE¼SW¼ sec.6, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 1.3 mi (2.1 km) upstream from mouth and 3.7 mi (6.0 km) northwest of Carson.	39.6	1977	6- 7-78	93.2
Bear Creek	Do.....	Lat 45°45'58", long 121°49'20", in NW¼NE¼ sec.8, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, 0.5 mi (0.8 km) upstream from mouth and 3.0 mi (4.8 km) northwest of Carson.	14.7	1977	6- 7-78	12.0
14128500 Wind River	Columbia River	Lat 45°44'10", long 121°48'12", in SW¼NE¼ sec.21, T.3 N., R.8 E., Skamania County, 0.8 mi (1.3 km) upstream from Little Wind River, 1.0 mi (1.6 km) northeast of Carson, and 1.9 mi (3.1 km) upstream from mouth. Records include flow of Little Wind River.	225	1934-77‡, 1978a	2-15-78 9- 7-78	1,390 210
		Minor basins between Wind and Washougal Rivers				
Rock Creek	Columbia River	Lat 45°41'44", long 121°53'30", in SE¼SW¼ sec.36, T.3 N., R.7 E., Skamania County, at mouth at Stevenson.	41.0	1977	6- 7-78	71.8
Hamilton Creek	Do.....	Lat 45°39'13", long 121°59'16", in SW¼SE¼ sec.18, T.2 N., R.7 E., Skamania County, at road crossing, 2.3 mi (3.7 km) west of North Bonneville.	11.8	1952, 1977	6- 7-78	28.1
Greenleaf Creek	Hamilton Creek	Lat 45°39'20", long 121°57'23", in N½ sec.39, T.2 N., R.7 E., Skamania County, 200 ft (61.0 m) downstream from bridge, 0.3 mi (0.5 m) upstream from mouth and 1.2 mi (1.9 km) northwest of North Bonneville.	5.87	1952-53, 1977	6- 7-78	11.6
Woodward Creek	Columbia River	Lat 45°37'18", long 122°01'45", in NW¼NE¼ sec.35, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing, 1.1 mi (1.8 km) northeast of town of Skamania.	8.08	1952-53, 1977	6- 6-78 8-14-78	22.4 6.29
Duncan Creek	Do.....	Lat 45°36'50", long 122°03'14", in NE¼SW¼ sec.34, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing and at Skamania.	4.28	1952, 1977	6- 6-78 8-14-78	7.40 0
Lawton Creek	Do.....	Lat 45°33'44", long 122°15'55", in NW¼NW¼ sec.24, T.1 N., R.4 E., Clark County, at State Highway 14 crossing and 8.2 mi (13.2 km) east of Central School, Camas.	4.89	1952-53, 1977	6- 6-78 8-14-78	4.12 2.32
Gibbons Creek	Do.....	Lat 45°34'48", long 122°18'33", in NE¼ sec.49 T.1 N., R.4 E., Clark County, at road crossing 0.4 mi (0.6 km) upstream from confluence with Campen Creek, 1 mi (1.6 km) upstream from mouth and 4.6 mi (7.4 km) east of Central School in Camas.	5.20	1951, 1977	6- 6-78 8-14-78	5.52 2.91
Campen Creek	Gibbons Creek	Lat 45°34'40", long 122°18'50", in N½ sec.49, T.1 N., R.4 E., Clark County, at road crossing 200 ft (61 m) upstream from mouth and 4.4 mi (7.1 km) east of Central School in Camas.	2.00	1951, 1977	6- 6-78 8-14-78	1.18 .52

‡ Operated as continuous-record station.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Washougal River basin				
Washougal River	Columbia River	Lat 45°41'36", long 122°07'25", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 800 ft (244 m) upstream from Stebbins Creek, 13.5 mi (21.7 km) northeast of Washougal.	30.3	1973, 1977	6- 8-78	55.8
Stebbins Creek	Washougal River	Lat 45°41'29", long 122°07'16", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 200 ft (61 m) upstream from road crossing, 300 ft (91 m) upstream from mouth and 13.5 mi (21.7 km) northeast of Washougal.	8.31	1973, 1977	6- 8-78	14.8
Dougan Creek	Do.....	Lat 45°40'28", long 122°09'16", in SW¼NE¼ sec.11, T.2 N., R.5 E., Skamania County, 500 ft (152 m) upstream from mouth and 11.5 mi (18.5 km) northeast of Washougal.	5.54	1953, 1961, 1977	6- 8-78	9.95
Washougal River	Columbia River	Lat 45°36'58", long 122°12'00", in SE¼NW¼ sec.33, T.2 N., R.5 E., Skamania County, at county road crossing, 0.9 mi (1.4 km) upstream from confluence with West Fork Washougal River and 4.0 4.0 mi (6.4 km) northwest of Prindle.	62.7	1977	6- 8-78	147
West Fork Washougal River	Washougal River	Lat 45°41'03", long 122°14'28", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 50 ft (15.2 m) upstream from confluence of Hagen Creek and 8.0 mi (12.9 km) northwest of Prindle.	8.16	1977	6- 8-78	24.5
Hagen Creek	West Fork Washougal River	Lat 45°41'03", long 122°14'30", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 80 ft (24.4 m) upstream from mouth and 8.0 mi (12.9 km) northwest of Prindle.	5.59	1977	6- 8-78	21.9
Wildboy Creek	Do.....	Lat 45°38'58", long 122°12'50", in NW¼NE¼ sec.20, T.2 N., R.5 E., Skamania County, 100 ft (30 m) upstream from mouth, 5.2 mi (8.4 km) northwest of Prindle.	7.80	1953, 1977	6- 8-78	18.7
14143000 West Fork Washougal River	Washougal River	Lat 45°36'58", long 122°13'06", in SE¼NW¼ sec.32, T.2 N., R.5 E., Skamania County, 200 ft (61 m) downstream from county road bridge, 1,000 ft (305 m) upstream from mouth, 7 mi (11.3 km) northeast of Washougal.	29.4	1951‡, 1952-54, 1961, 1977	6- 6-78 8-14-78	94.1 34.6
Canyon Creek	Do.....	Lat 45°36'17", long 122°13'38", in NE¼NE¼ sec.6, T.1 N., R.5 E., Skamania County, 200 ft (61 m) upstream from State Highway 140 crossing, 3.6 mi (5.8 km) northeast of Prindle.	4.83	1951, 1977	6- 6-78 8-14-78	8.11 2.80
Cougar Creek	Do.....	Lat 45°37'33", long 122°18'20", in NW¼SW¼ sec.27, T.2 N., R.4 E., Clark County, at State Highway 140 crossing, 3.5 mi (5.6 km) northeast of Washougal.	5.16	1951, 1961, 1977	6- 7-78 8-14-78	9.91 4.30
Boulder Creek	Little Washougal River	Lat 45°40'40", long 122°19'29", in NE¼NW¼ sec.9, T.2 N., R.4 E., Clark County, at Fessenden Lessard Road crossing, and 6.9 mi (11.1 km) northeast of Washougal.	4.52	----	6- 7-78	11.3
Little Washougal River	Washougal River	Lat 45°39'06", long 122°20'50", in SW¼SW¼ sec.17, T.2 N., R.4 E., Clark County, at old logging road crossing, 4.9 mi (7.9 km) north of Washougal.	15.8	1951, 1961, 1977	6- 7-78	28.4
14144000 Little Washougal	Do.....	Lat 45°36'51", long 122°21'26", in NW¼SE¼ sec.31, T.2 N., R.4 E., Clark County, 1.1 mi (1.8 km) upstream from mouth, and 1.8 mi (2.9 km) north of Washougal.	23.8	1951-56‡, 1956-68a, 1977	6- 7-78	37.9
Matney Creek	Lacamas Creek	Lat 45°40'18", long 122°26'19", in NW¼SE¼ sec.9, T.2 N., R.3 E., Clark County, 40 ft (12.2 m) upstream from county road crossing 0.2 mi (0.3 km) upstream from mouth, and 6.0 mi (9.7 km) northwest of Camas.	6.44	1951, 1977	6- 7-78	3.99
14144500 Lacamas Creek	Washougal River	Lat 45°40'19", long 121°29'13", in SW¼ sec.7, T.2 N., R.3 E., Clark County, 50 ft (15 m) above State Highway 500 bridge at Proebstel.	22.1	1942, 1943, 1951‡, 1961, 1967, 1977	6- 7-78	20.1
Fifth Plain Creek	Lacamas Creek	Lat 45°42'38", long 122°28'08", in SE¼SW¼ sec.29, T.3 N., R.3 E., Clark County, at road crossing 2.9 mi (4.7 km) northeast of Proebstel.	2.27	1951, 1977	6- 7-78	.74

‡ Operated as continuous-record station.

a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Washougal River basin--Continued				
14144560 Fifth Plain Creek	Lacamas Creek	Lat 45°40'21", long 122°29'35", in W½ sec.7, T.2 N., R.3 E., Clark County, at State Highway 500 crossing, 0.3 mi (0.5 km) upstream from mouth, 0.5 mi (0.8 km) northwest of Proebstel.	18.9	1942, 1943, 1951, 1961, 1977	6- 7-78	10.8
14144580 Lacamas Creek	Washougal River	Lat 45°38'20", long 122°27'21", in SW¼SE¼ sec.51, T.2 N., R.3 E., Clark County, 150 ft (45.7 m) upstream from county road bridge, 4.2 mi (6.8 km) northwest of Camas High School and at mile 5.5 (8.8 km).	51.4	1941-43, 1951, 1961, 1974, 1977	6- 7-78	34.4
		Lake River basin				
14211900 Burntbridge Creek	Lake River	Lat 45°39'07", long 122°39'18", in SE¼SW¼ sec.14, T.2 N., R.1 E., Clark County, at "P" Street, 0.3 mi (0.5 km) east of Interstate 5 at north city limits of Vancouver.	21.6	1949-71a, 1977	6- 8-78	4.51
14212000 Salmon Creek	Do.....	Lat 45°46'26", long 122°26'40", in NE¼SW¼ sec.4, T.3 N., R.3 E., Clark County, 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 m) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3	1944-75‡, 1976-77a, 1976-78a	6- 8-78	15.5
Salmon Creek	Do.....	Lat 45°44'35", long 122°32'44", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, 20 ft (6.1 m) upstream from N.E. Caples Road crossing, 5.3 mi (8.5 km) north of Orchards and at mile 14.6 (23.5 km).	35.7	1941-43, 1977	6- 8-78	22.0
Weaver Creek	Salmon Creek	Lat 45°44'32", long 122°32'43", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, at State Highway 503 crossing, 0.1 mi (0.2 km) upstream from mouth, and 5.3 mi (8.5 km) north of Orchards.	6.47	1941-43, 1947, 1951, 1973, 1977	6- 8-78	4.69
Unnamed tributary	Do.....	Lat 45°43'22", long 122°35'23", in NE¼NW¼ sec.29, T.3 N., R.2 E., Clark County, at N.E. 139th St. crossing and 2.9 mi (4.7 km) northeast of town of Salmon Creek.	12.9	1941-43, 1947, 1951, 1977	6- 8-78	5.73
Mill Creek	Do.....	Lat 45°43'51", long 122°37'35", in SW¼NE¼ sec.24, T.3 N., R.1 E., Clark County, at Salmon Creek Road crossing near mouth.	14.0	1941-43, 1947, 1951, 1961, 1967, 1977	6- 8-78	1.63
Salmon Creek	Lake River	Lat 45°42'48", long 122°41'05", in NW¼SE¼ sec.28, T.3 N., R.1 E., Clark County, just below Cougar Canyon Creek, 1.1 mi (1.8 km) northeast of Felida.	87.7	1977	6- 8-78	46.5
Whipple Creek	Do.....	Lat 45°44'58", long 122°42'41", in NE¼NW¼ sec.17, T.3 N., R.1 E., Clark County, at State Highway crossing, 4.8 mi (7.7 km) southeast of Ridgefield.	8.85	1947, 1951, 1961, 1977	6- 8-78	3.14
		Minor basin between Lake and Lewis River				
Gee Creek	Columbia River	Lat 45°47'37", long 122°41'00", in NE¼NE¼ sec.33, T.4 N., R.1 E., Clark County, at road crossing, 3.3 mi (5.3 km) southeast of Ridgefield.	5.29	1947, 1977	6- 8-78	0.65
		Kalama River basin				
North Fork Kalama River	Kalama River	Lat 46°05'47", long 122°23'58", in NW¼NE¼ sec.14, T.7 N., R.3 E., Cowlitz County, at bridge 50 ft (15 m) upstream from mouth and 5.6 mi (9.0 km) northwest of Cougar.	12.8	1977	6- 6-78	28.2
Elk Creek	Do.....	Lat 46°04'28", long 122°30'38", in NW¼SW¼ sec.24, T.7 N., R.2 E., Cowlitz County, at road crossing, 200 ft (61 m) upstream from mouth and 5.9 mi (9.5 km) east of Pigeon Springs.	11.3	1926, 1951, 1977	6- 6-78	13.2
Gobar Creek	Do.....	Lat 46°03'07", long 122°37'22", in SW¼SE¼ sec.25, T.7 N., R.1 E., Cowlitz County, 300 ft (91 m) upstream from road crossing at Pigeon Springs.	21.2	1951-52, 1961, 1973, 1977	6- 6-78	49.4

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Kalama River basin--Continued				
Wild Horse Creek	Kalama River	Lat 46°02'54", long 122°37'58", in SW¼NW¼ sec.36, T.7 N., R.1 E., Cowlitz County, 100 ft (30 m) upstream from road crossing near mouth and 0.5 mi (0.8 km) southwest of Pigeon Springs.	8.23	1951, 1961, 1977	6- 6-78	16.3
Little Kalama River	Do.....	Lat 45°59'18", long 122°40'16", in NE¼SW¼ sec.22, T.6 N., R.1 E., Cowlitz County, 30 ft (9.1 m) downstream from private road crossing, 200 ft (61.0 m) downstream from mouth of Dee Creek and 6.6 mi (10.6 km) northeast of Woodland.	6.18	1977	6- 7-78	8.89
Italian Creek	Do.....	Lat 46°02'01", long 122°43'42", in SW¼NE¼ sec.6, T.6 N., R.1 E., Cowlitz County, at Bratschi Doane Road crossing 0.6 mi (1.0 km) upstream from mouth and 5.3 mi (8.5 km) southwest of Pigeon Springs.	2.94	1977	6- 6-78	4.23
Hatchery Creek	Do.....	Lat 46°02'43", long 122°48'11", in NW¼SW¼ sec.34, T.7 N., R.1 W., Cowlitz County, at Kalama River Road bridge near mouth near Salmon hatchery and 3.2 mi (5.1 km) northeast of Kalama.	5.96	1951, 1977	6- 6-78	17.1
		Minor basins between Kalama and Cowlitz Rivers				
Owl Creek	Columbia River	Lat 46°05'30", long 122°52'05", in SE¼NE¼ sec.13, T.7 N., R.2 W., Cowlitz County, at old U.S. Highway 99 crossing and 1.4 mi (2.3 km) north of Carrolls.	7.81	1951, 1977	6- 7-78 8-14-78	1.64 .64
		Cowlitz River basin				
14238800 Cowlitz River	Columbia River	Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, at State Highway 505 bridge in Toledo, and at mile 33.7 (54.2 km).	1,461	1950-70d, 1972, 1975, 1977‡	2-17-78 4- 4-78 8- 8-78	5,900 3,390 2,350
		Minor basins between Cowlitz River and Abernathy Creek				
Clark Creek	Columbia River	Lat 46°10'46", long 122°59'31", in SE¼NE¼ sec.13, T.8 N., R.3 W., Cowlitz County, at Pacific Highway crossing 3.8 mi (6.1 km) northwest of city center of Longview.	4.58	1949, 1977	6- 6-78 8-14-78	4.13 1.02
Coal Creek	Do.....	Lat 46°11'16", long 123°02'00", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 200 ft (61 m) upstream from county road crossing, just upstream from Harmony Creek and 4.2 mi (6.8 km) east of Stella.	20.0	1949-50, 1967, 1977	6- 6-78 8-14-78	28.9 9.24
Harmony Creek (formerly published as Mosquito Creek)	Coal Creek	Lat 46°11'16", long 123°02'06", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 30 ft (9.1 m) upstream from mouth and 4.2 mi (6.8 km) east of Stella.	6.12	1949, 1977	6- 6-78 8-14-78	5.99 1.84
Falls Creek	Columbia River	Lat 46°11'57", long 123°06'51", in NE¼NE¼ sec.12, T.8 N., R.4 W., Cowlitz County, at old Stella Road crossing, 0.6 mi (1.0 km) north of Stella.	1.54	1977	6- 7-78 8-14-78	1.20 .72
14245500 Germany Creek	Do.....	Lat 46°11'48", long 123°07'34", in NW¼NW¼ sec.12, T.8 N., R.4 W., Cowlitz County, 0.5 mi (0.8 km) upstream from mouth and 10 mi (16.1 km) northwest of Longview.	22.2	1949-50‡, 1950-54, 1977	6- 7-78 8-14-78	39.8 9.23
		Abernathy Creek basin				
Abernathy Creek	Columbia River	Lat 46°15'38", long 123°10'32", in SE¼SE¼ sec.16, T.9 N., R.4 W., Cowlitz County, at road crossing 0.3 mi (0.5 km) upstream from Erick Creek and 15 mi (24 km) northwest of Longview.	9.59	1949, 1977	6- 7-78 8-14-78	33.4 10.8
Slide Creek	Abernathy Creek	Lat 46°12'34", long 123°09'09", in SE¼NE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 200 ft (61 m) upstream from mouth and 11.5 mi (18.5 km) northwest of Longview.	2.47	1949, 1977	6 -7-78 8-14-78	3.40 .95
14246000 Abernathy Creek	Columbia River	Lat 46°12'10", long 123°09'15", in NE¼SE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 10.5 mi (16.9 km) northwest of R.A. Long High School and at mile 1.3 (2.1 km).	20.3	1949-59‡, 1973, 1977	6- 7-78 8-14-78	44.0 14.5

‡ Operated as continuous-record station.
d Operated as a stage station (discharge measurements 1962-70).

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Elochoman River basin						
West Fork Elochoman River	Elochoman River	Lat 46°19'18", long 123°15'40", in SW¼NE¼ sec.26, T.10 N., R.5 W., Wahkiakum County, 700 ft (213 m) upstream from private logging bridge, 800 ft (244 m) upstream from mouth and 9.8 mi (15.8 km) northeast of Skamokawa.	10.1	1977	6- 6-78 8-15-78	23.4 20.4
Elochoman River	Columbia River	Lat 46°19'15", long 123°15'30", in SE¼NE¼ sec.26, T.10 N., R.5 W., Wahkiakum County, 800 ft (244 m) downstream from West Fork and 9.8 mi (15.8 km) northeast of Skamokawa.	35.4	1949, 1977	6- 6-78 8-15-78	83.8 53.6
Beaver Creek	Elochoman River	Lat 46°13'35", long 123°19'10", in NE¼NE¼ sec.32, T.9 N., R.5 W., Wahkiakum County, at private road crossing 0.5 mi (0.8 km) upstream from mouth and 3.4 mi (5.5 km) northeast of Cathlamet.	7.21	1949, 1977	6- 6-78 8-15-78	9.12 12.8
14247500 Elochoman River	Columbia River	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, 125 ft (38.1 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8	1941-71‡, 1972-78a 1973, 1976-77	6- 6-78 8-15-78	114 109
Skamokawa Creek basin						
Skamokawa Creek	Columbia River	Lat 46°19'11", long 123°27'16", in NE¼SW¼ sec.29, T.10 N., R.6 W., Wahkiakum County, 200 ft (61.0 m) below confluence of Left Fork and 3.4 mi(5.5 km) north of Skamokawa.	15.8	1977	6- 6-78	32.4
14248000 Skamokawa Creek	Do.....	Lat 46°17'57", long 123°26'34", in NE¼NE¼ sec.5, T.9 N., R.6 W., Wahkiakum County, 25 ft (7.6 m) downstream from county road bridge and 2.0 mi (3.2 km) north of Skamokawa.	17.4	1949-50‡, 1951, 1954, 1977	6- 6-78	33.0
Falk Creek	Skamokawa Creek	Lat 46°17'58", long 123°26'20", near north line NW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, at county road crossing 2.1 mi (3.4 km) nrotheast of Skamokawa.	3.49	1949, 1977	6- 6-78	5.05
Wilson Creek	Do.....	Lat 46°17'20", long 123°26'15", in SW¼SW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, 100 ft (30 m) upstream from East Valley road crossing and 1.5 mi (2.4 km) northeast of Skamokawa.	13.8	1928, 1929, 1949-50, 1977	6- 7-78	26.8
Minor basin between Skamokawa Creek and Grays River						
14248200 Jim Crow Creek	Columbia River	Lat 46°16'37", long 123°33'37", in NE¼SW¼ sec.9, T.9 N., R.7 W., Wahkiacum County, 600 ft (180 m) downstream from logging bridge, 900 ft (270 m) upstream from Fink Creek, 1.5 mi (2.4 km) upstream from mouth, and 6.0 mi (9.7 km) southeast of the town of Grays River.	5.48	1964-74‡, 1975-78a	5-23-78	10.5
Crooked Creek	Do.....	Lat 46°17'56", long 123°38'52", in NE¼NE¼ sec.3, T.9 N., R.8 W., Wahkiakum County, at county road crossing, 2.0 mi (3.2 km) upstream from mouth and 2.6 mi (4.2 km) south of Rosburg.	10.2	1949, 1967, 1977	6- 7-78	12.6
Grays River basin						
14249000 Grays River	Columbia River	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N., R.6 W., Pacific County, 500 ft (152 m) upstream from South Fork, 6.8 mi (10.9 km) northeast of town of Grays River, and at mile 17.8 (28.6 km).	39.9	1956-75‡, 1976-78a, 1977	6- 7-78	90.7
Fossil Creek	Grays River	Lat 46°21'44", long 123°33'10", in NE¼SW¼ sec.9, T.10 N., R.7 W., Wahkiakum County, 75 ft (22.9 m) upstream from logging road bridge 0.1 mi (0.2 km) upstream from mouth and 2.7 mi (4.3 km) east of town of Grays River.	5.50	1928, 1949, 1977	6- 7-78	9.53
Klints Creek	Do.....	Lat 46°21'22", long 123°33'30", in NW¼NW¼ sec.16, T.10 N., R.7 W., Wahkiakum County, 50 ft (15 m) below private logging road crossing and 2.5 mi (4.0 km) east of town of Grays River.	3.57	1949, 1977	6- 7-78	4.56
Fall Creek	Hull Creek	Lat 46°22'25", long 123°35'20", in SW¼SE¼ sec.6, T.10 N., R.7 W., Wahkiakum County, 30 ft (9.1 m) upstream from county road crossing, near mouth and 1.6 mi (2.6 km) northeast of town of Grays River.	3.02	1953, 1977	6- 7-78	4.08
Malone Creek	Seal Slough	Lat 46°20'08", long 123°38'32", in SW¼NW¼ sec.23, T.10 N., R.8 W., Wahkiakum County, just upstream from U.S. Highway 830 crossing at Rosburg.	2.72	1949, 1977	6- 7-78	4.36

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Deep River basin				
Deep River	Columbia River	Lat 46°21'39", long 123°40'50", in NW¼SW¼ sec.9, T.10 N., R.8 W., Wahkiakum County, upstream side of bridge, just upstream from confluence of Henderson Creek and 2.6 mi (4.2 km) northwest of Rosburg.	1.76	1977	6- 7-78	2.06

Samples are collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12017303 - KINDRED SLOUGH AT HIGHWAY 105 NEAR TOKELAND, WA (LAT 46 43 39 LONG 124 00 29)

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
MAY . 1978									
25...	1125	100	7.4	12.8	20	2	3.1	2.9	14

DATE	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
MAY . 1978									
25...	60	1.4	.6	21	0	17	1.3	8.4	17

12017315 - CANNERY SLOUGH TRIBUTARY NEAR TOKELAND, WA (LAT 46 43 45 LONG 124 02 15)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
APR . 1978										
14...	1028	.86	118	--	8.4	11.1	--	--	--	--
19...	1115	1.0	--	--	9.2	--	4000	K370	--	--
MAY										
18...	1100	.80	110	6.6	9.6	10.7	--	2	--	--
24...	0902	.93	120	7.6	8.8	10.8	--	70	19	5
AUG										
01...	1050	.58	120	7.4	11.4	9.8	--	K48	--	--

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
APR . 1978										
14...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
MAY										
18...	--	--	--	--	--	--	--	--	--	--
24...	3.4	2.6	15	62	1.5	.8	17	0	14	.7
AUG										
01...	--	--	--	--	--	--	--	--	--	--

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR . 1978										
14...	--	--	7.8	.01	.04	.25	.29	.02	.08	.25
19...	--	--	--	--	--	--	--	--	--	--
MAY										
18...	--	--	--	--	--	--	--	--	--	--
24...	6.7	20	--	--	--	--	--	--	--	--
AUG										
01...	--	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12017330 - PACIFIC CO. DRAINAGE DITCH NO. 1 NEAR TOKELAND, WA (LAT 46 44 09 LONG 124 03 56)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
APR , 1978											
26...	1100	14	230	7.2	11.2	--	5400	K860	46	0	8.2
MAY											
18...	1010	11	245	6.6	11.4	5.8	--	370	--	--	--
JUL											
07...	1115	5.7	280	7.2	12.4	--	--	--	--	--	--
AUG											
01...	1240	3.5	245	7.1	13.8	6.3	--	510	--	--	--

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
APR , 1978										
26...	6.2	28	55	1.8	3.4	65	0	53	6.6	11
MAY										
18...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	--	--	--	--	--	--	--	--	--	--
AUG										
01...	--	--	--	--	--	--	--	--	--	--

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR , 1978										
26...	36	--	--	--	--	--	--	--	--	--
MAY										
18...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	--	6	300	0	0	0	0	.0	0	0
AUG										
01...	--	--	--	--	--	--	--	--	--	--

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL (UG/L)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL (UG/L)
APR , 1978										
26...	1100	.0	0	.00	.4	.0	0	.01	28	.00
JUL										
07...	1115	.0	--	.01	--	.0	--	.00	--	.00

DATE	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DI-AZINON, TOTAL (UG/L)	DI-AZINON, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
APR , 1978										
26...	8.1	.01	7.3	.00	.0	.01	.4	--	.00	.0
JUL										
07...	--	.00	--	.18	--	.02	--	.00	.00	--

DATE	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	MALA-THION, TOTAL (UG/L)	MALA-THION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
APR , 1978										
26...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
JUL										
07...	.00	--	.00	--	.00	--	.00	--	.00	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12017330 - PACIFIC CO. DRAINAGE DITCH NO. 1 NEAR TOKELAND, WA--Continued

DATE	METHOXYCHLOR, TOTAL (UG/L)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARATHION, TOTAL (UG/L)	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRITHION, TOTAL (UG/L)	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)
APR , 1978										
26...	.00	.0	.00	.0	.00	.0	.00	.00	.00	.0
JUL										
07...	.00	--	.00	--	.00	--	.00	.00	.02	--

DATE	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOTTOM MATERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOTTOM MATERIAL (UG/KG)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOTTOM MATERIAL (UG/KG)
APR , 1978										
26...	0	0	.00	.0	.29	0	.05	0	.00	.0
JUL										
07...	0	--	.00	--	--	--	--	--	--	--

12040910 - HOH RIVER AT RIVER MILE 30.0, NEAR FORKS, WA (LAT 47 48 56 LONG 124 01 50)

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
SEP , 1978										
19...	1200	83	8.9	1	11.2	97	.8	40	11	14

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
SEP , 1978									
19...	1.1	1.9	9	.1	.2	29	11	1.4	4.9

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP , 1978									
19...	52	.07	.05	.02	.06	.08	.13	.60	.00

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
SEP , 1978										
19...	1200	83	8.9	1	11.2	97	.8	40	11	14

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
SEP , 1978									
19...	1.1	1.9	9	.1	.2	29	11	1.4	4.9

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP , 1978									
19...	52	.07	.05	.02	.06	.08	.13	.60	.00

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
12040930 - HOH RIVER AT MILE 28.4 NR FORKS, WASH (LAT 47 48 37 LONG 124 03 33)									
SEP , 1978 19...	1255	--	82	--	8.7	1	10.1	86	--
12040940 - CANYON CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 44 LONG 124 04 12)									
SEP , 1978 19...	1445	E3.0	75	--	11.0	1	10.2	93	.3
12040960 - OWL CHEEK AT MOUTH NR FORKS, WASH (LAT 47 48 17 LONG 124 04 39)									
SEP , 1978 19...	1530	E25	80	--	9.8	0	11.1	97	.3
12040965 - SPRUCE CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 19 LONG 124 04 48)									
SEP , 1978 19...	1545	E2.4	78	--	14.8	0	11.7	114	.6
12040985 - MAPLE CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 14 LONG 124 05 17)									
SEP , 1978 19...	1600	F100	60	--	9.6	0	10.8	97	.4

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
12040930 - HOH RIVER AT MILE 28.4 NR FORKS, WASH (LAT 47 48 37 LONG 124 03 33)								
SEP , 1978 19...	--	.06	.07	.14	.21	.27	1.2	.01
12040940 - CANYON CHEEK AT MOUTH NR FORKS, WASH (LAT 47 48 44 LONG 124 04 12)								
SEP , 1978 19...	--	.32	.02	.00	.02	.34	1.5	.01
12040960 - OWL CHEEK AT MOUTH NR FORKS, WASH (LAT 47 48 17 LONG 124 04 39)								
SEP , 1978 19...	--	.16	.02	.04	.06	.22	1.0	.01
12040965 - SPRUCE CHEEK AT MOUTH NR FORKS, WASH (LAT 47 48 19 LONG 124 04 48)								
SEP , 1978 19...	--	.07	.01	.03	.04	.11	.50	.00
12040985 - MAPLE CHEEK AT MOUTH NR FORKS, WASH (LAT 47 48 14 LONG 124 05 17)								
SEP , 1978 19...	--	.17	.02	.03	.05	.22	1.0	.01

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
12040990 - DISMAL CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 21 LONG 124 05 25)									
SEP , 1978									
19...	1625	E2.6	98	--	12.0	0	9.1	84	.3
12041040 - HOH RIVER AT RIVER MILE 24.0 NR FORKS, WASH (LAT 47 48 44 LONG 124 07 28)									
SEP , 1978									
19...	1745	--	78	--	11.4	2	10.6	96	--

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
12040990 - DISMAL CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 21 LONG 124 05 25)								
SEP , 1978								
19...	--	.19	.03	.00	.03	.22	1.0	.01
12041040 - HOH RIVER AT RIVER MILE 24.0 NR FORKS, WASH (LAT 47 48 44 LONG 124 07 28)								
SEP , 1978								
19...	--	.07	.02	.00	.02	.09	.40	--

12041100 - HOH RIVER AT RIVER MILE 20.0, NEAR FORKS, WASH (Lat 47 48 44 LONG 124 07 28)

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
SEP , 1978									
19...	1900	78	11.4	2	10.4	95	35	7	12

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
SEP , 1978									
19...	1.2	2.0	11	.1	.2	28	10	1.5	5.3

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
SEP , 1978									
19...	49	.07	.08	.03	.01	.04	.12	.50	.01

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
12041110 - WILLOUGHBY CREEK AT MOUTH NR FORKS, WASH (LAT 47 49 19 LONG 124 11 46)									
SEP , 1978 19...	1940	E12	80	--	11.0	0	10.6	96	.2
12041120 - ELK CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 56 LONG 124 12 54)									
SEP , 1978 20...	0905	E3.8	67	6.1	11.1	6	7.9	72	.8
12041130 - HOH RIVER AT MILE 18.0 NR FORKS, WASH (LAT 47 48 43 LONG 124 13 29)									
SEP , 1978 20...	0945	--	84	7.2	9.6	2	11.1	98	--
12041140 - ALDER CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 43 LONG 124 13 42)									
SEP , 1978 20...	1030	E17	43	6.7	10.4	1	10.7	96	.9
12041170 - WINFIELD CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 36 LONG 124 13 50)									
SEP , 1978 20...	1030	E15	35	6.9	9.8	1	10.2	90	.6

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
12041110 - WILLOUGHBY CREEK AT MOUTH NR FORKS, WASH (LAT 47 49 19 LONG 124 11 46)								
SEP , 1978 19...	--	.16	.02	.01	.03	.19	.80	.01
12041120 - ELK CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 56 LONG 124 12 54)								
SEP , 1978 20...	19	.48	.01	.02	.03	.51	2.3	.01
12041130 - HOH RIVER AT MILE 18.0 NR FORKS, WASH (LAT 47 48 43 LONG 124 13 29)								
SEP , 1978 20...	30	.10	.02	.00	.02	.12	.50	.01
12041140 - ALDER CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 43 LONG 124 13 42)								
SEP , 1978 20...	25	.13	.02	.01	.03	.16	.70	.01
12041170 - WINFIELD CREEK AT MOUTH NR FORKS, WASH (LAT 47 48 36 LONG 124 13 50)								
SEP , 1978 20...	38	.11	.02	.06	.08	.19	.80	.01

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12041206 - HOH RIVER AT RIVER MILE 12.0, NEAR FORKS, WASH (LAT 47 47 12 LONG 124 16 47)

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
SEP . 1978										
20...	1235	81	7.0	9.8	2	11.0	97	34	37	11

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
SEP . 1978										
20...	13	1.2	2.2	11	.2	.2	26	11	1.8	5.5

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP . 1978									
20...	51	.07	.10	.02	.02	.04	.14	.60	.01

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)
12041209 - LOST CREEK AT MOUTH NR FORKS, WASH (LAT 47 47 01 LONG 124 17 02)									
SEP . 1978									
20...	1315	6.8	36	6.6	10.6	2	10.4	94	.7
12041212 - HOH RIVER AT MILE 8.9 NR FORKS, WASH (LAT 47 45 45 LONG 124 18 51)									
SEP . 1978									
20...	1415	--	78	6.7	9.9	2	11.2	99	--

DATE	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12041209 - LOST CREEK AT MOUTH NR FORKS, WASH (LAT 47 47 01 LONG 124 17 02)								
SEP . 1978								
20...	87	.05	.01	.07	.08	.13	.60	.02
12041212 - HOH RIVER AT MILE 8.9 NR FORKS, WASH (LAT 47 45 45 LONG 124 18 51)								
SEP . 1978								
20...	22	.10	.02	.02	.04	.14	.60	.01

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12041214 - HOH RIVER AT RIVER MILE 6.7, NEAR FORKS, WASH (LAT 47 45 07 LONG 124 20 05)

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
SEP . 1978 20...	1505	79	7.0	10.2	3	10.9	97	18	35	8

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
SEP . 1978 20...	12	1.2	2.1	12	.2	.2	27	10	1.9	5.5

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
SEP . 1978 20...	49	.07	.10	.02	.04	.06	.16	.70	.01

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
12041217 - NOLAN CREEK AT HWY 101 BRIDGE NR FORKS, WASH (LAT 47 45 07 LONG 124 19 16)									
SEP . 1978 20...	1905	--	30	6.6	12.0	1	9.7	90	.9
12041220 - BRADEN CREEK AT HWY 101 BRIDGE NR FORKS, WASH (LAT 47 44 22 LONG 124 20 51)									
SEP . 1978 20...	1855	--	26	6.4	11.4	7	9.7	88	.5

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)
12041217 - NOLAN CREEK AT HWY 101 BRIDGE NR FORKS, WASH (LAT 47 45 07 LONG 124 19 16)								
SEP . 1978 20...	40	.02	.03	.05	.08	.10	.40	.02
12041220 - BRADEN CREEK AT HWY 101 BRIDGE NR FORKS, WASH (LAT 47 44 22 LONG 124 20 51)								
SEP . 1978 20...	11	.08	.01	.11	.12	.20	.90	.02

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12041223 - HOH RIVER AT RIVER MILE 4.3, NEAR FORKS, WASH (LAT 47 44 10 LONG 124 21 59)

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
SEP , 1978 20...	1635	78	7.2	10.8	3	10.8	97	13	37	12

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
SEP , 1978 20...	13	1.2	2.3	12	.2	.2	25	10	2.0	5.6

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP , 1978 20...	49	.07	.11	.02	.05	.07	.18	.80	.01

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)

12041226 - HOH RIVER AT MILE 2.3 NR FORKS, WASH (LAT 47 44 50 LONG 124 23 46)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)
SEP , 1978 20...	1725	--	80	7.0	11.2	3	11.1	100	--

DATE	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP , 1978 20...	15	.11	.03	.00	.03	.14	.60	.01

12041230 - CHALAAT CREEK AT TREATMENT PLANT, HOH RESERVATION, WASH (LAT 47 44 32 LONG 124 24 58)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
MAR , 1978 29...	1150	4.0	41	7.0	11.2	1	10.5	260	3	10	1
MAY 17...	1000	2.9	50	--	10.8	--	9.8	--	14	--	--
AUG 02...	1100	1.0	66	7.2	12.8	--	9.7	--	10	--	--

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
MAR , 1978 29...	2.3	1.1	4.9	50	.7	.2	11	0	9	1.8
MAY 17...	--	--	--	--	--	--	--	--	--	--
AUG 02...	--	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12041230 - CHALAAT CREEK AT TREATMENT PLANT, HOH RESERVATION, WASH --Continued

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
MAR , 1978										
29...	8.2	7.7	.02	.07	.29	.36	.38	1.7	.02	.00
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	--	--	--	--	--	--	--	--	--	--

DATE	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
MAR , 1978										
29...	.00	0	0	0	0	0	2	.0	0	0
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	--	--	--	--	--	--	--	--	--	--

12041234 - CHALAAT CREEK AT COMMUNITY CENTER, HOH RESERVATION, WASH (LAT 47 44 45 LONG 124 25 20)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
MAR , 1978											
29...	1040	4.0	57	7.0	10.0	1	8.9	140	2	13	2
MAY											
17...	1105	3.5	62	--	11.4	--	9.6	--	6	--	--
AUG											
02...	1145	1.0	77	6.2	14.0	--	6.4	--	K33	--	--

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)
MAR , 1978										
29...	2.9	1.4	6.1	50	.7	.3	14	0	11	2.2
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	--	--	--	--	--	--	--	--	--	--

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
MAR , 1978										
29...	3.3	9.6	.05	.11	.34	.45	.50	2.2	.04	.01
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	--	--	--	--	--	--	--	--	--	--

DATE	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
MAR , 1978										
29...	.03	0	0	1	0	0	3	.0	0	0
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	--	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12041250 - HOH RIVER AT RIVER MILE 0.6, NEAR FORKS, WASH (LAT 47 44 58 LONG 124 25 43)

DATE	TIME	SPE- CIFIC CON- DUCT- ANCF (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NFSS (MG/L AS CACO3)
SEP , 1978										
20...	1805	83	7.2	11.2	3	10.9	98	.4	15	37

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
SEP , 1978										
20...	11	13	1.2	2.6	13	.2	.2	26	11	2.2

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)
SEP , 1978										
20...	5.6	51	.07	.11	.04	.02	.06	.17	.80	.01

12043156 - SOOES RIVER ABOVE PILCHUCK CREEK, NEAR OZETTE, WASH (LAT 48 14 44 LONG 124 37 13)

DATE	TIME	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	OXYGEN, DIS- SOLVED (MG/L)	PH (UNITS)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV , 1976								
17...	1035	10.2	90	40	10.6	6.9	--	--
17...	1305	--	--	--	--	--	2700	<1
JAN , 1977								
18...	1005	7.8	55	39	11.3	7.2	8910	<1
MAR								
23...	0915	6.2	10	53	10.9	6.9	--	--

12043159 - PILCHUCK CREEK NEAR OZETTE, WASH (LAT 48 13 55 LONG 124 37 35)

DATE	TIME	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	OXYGEN, DIS- SOLVED (MG/L)	PH (UNITS)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	ALKA- LINITY (MG/L AS CACO3)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
NOV , 1976										
17...	1125	10.2	35	46	9.5	6.5	--	--	--	--
17...	1300	--	--	--	--	--	--	--	--	--
JAN , 1977										
18...	0930	7.8	10	38	10.8	6.9	--	--	--	--
MAR										
23...	0835	6.4	10	68	10.5	6.8	--	--	--	--
NOV										
03...	0840	7.0	2	55	10.5	6.5	7.1	11	14	0

DATE	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
NOV , 1976									
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
JAN , 1977									
18...	--	--	--	--	--	--	--	--	--
MAR									
23...	--	--	--	--	--	--	--	--	--
NOV									
03...	.51	.21	.06	.27	.24	17	5	4.4	1.4

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12043159 - PILCHUCK CREEK NEAR OZETTE, WASH--Continued

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	SODIUM PERCENT	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SULFATE DIS-SOLVED (MG/L AS SO4)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, TOTAL (MG/L AS NO3)
NOV , 1976									
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	3700	B130	--
JAN , 1977									
18...	--	--	--	--	--	--	B1500	B6	--
MAR									
23...	--	--	--	--	--	--	--	--	--
NOV									
03...	4.9	.5	38	.8	4.2	7.2	230	K44	2.3

12043163 - SOOES RIVER BELOW MILLER CREEK, NEAR OZETTE, WASH (LAT 48 15 56 LONG 124 37 28)

DATE	TIME	TEMPER-ATURE (DEG C)	STREAM-FLOW, INSTAN-TANEOUS (CFS)	TUR-BID-ITY (JTU)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	OXYGEN, DIS-SOLVED (MG/L)	PH (UNITS)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV , 1976									
17...	0930	10.6	660	22	45	10.3	7.1	--	--
17...	1315	--	520	--	--	--	--	5400	B200
JAN , 1977									
18...	1047	8.0	1820	45	39	10.1	6.9	B1400	B9
MAR									
23...	0945	6.8	374	15	55	11.1	7.1	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)

12043173 - WAATCH R BLW EDUCKET CR AT NEAH BAY,WASH (LAT 48 21 26 LONG 124 37 30)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1977										
02...	1605	131	50	6.3	8.0	1	11.3	--	--	13
03...	1025	77	--	--	--	--	--	100	K6	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)

12043173 - WAATCH R BLW EDUCKET CR AT NEAH BAY,WASH (LAT 48 21 26 LONG 124 37 30)

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
NOV , 1977										
02...	4	3.5	1.1	5.1	45	.6	.4	11	0	9
03...	--	--	--	--	--	--	--	--	--	--

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)

12043173 - WAATCH R BLW EDUCKET CR AT NEAH BAY,WASH (LAT 48 21 26 LONG 124 37 30)

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)
NOV , 1977									
02...	8.8	4.9	4.3	.69	.07	.13	.20	.89	3.9
03...	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
12043176 - WAATCH RIVER AT NEAH BAY,WASH (LAT 48 21 23 LONG 124 37 57)										
NOV , 1977										
02...	1415	--	65	6.1	8.3	2	10.5	--	--	16
03...	1000	--	--	--	--	--	--	160	K3	--
12043186 - VILLAGE CR AT NEAH BAY,WASH (LAT 48 22 11 LONG 124 37 38)										
NOV , 1977										
02...	1245	--	53	6.9	8.2	1	11.1	--	--	15
03...	1015	--	--	--	--	--	--	92	K6	--
12043190 - SAIL RIVER NR NEAH BAY,WASH (LAT 48 21 27 LONG 124 33 38)										
NOV , 1977										
02...	1100	151	50	7.5	8.0	1	10.3	--	--	12
03...	1104	80	--	--	--	--	--	120	<3	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
12043176 - WAATCH RIVER AT NEAH BAY,WASH (LAT 48 21 23 LONG 124 37 57)										
NOV , 1977										
02...	5	3.9	1.5	4.9	39	.5	.7	13	0	11
03...	--	--	--	--	--	--	--	--	--	--
12043186 - VILLAGE CR AT NEAH BAY,WASH (LAT 48 22 11 LONG 124 37 38)										
NOV , 1977										
02...	5	3.5	1.5	5.6	44	.6	.4	12	0	10
03...	--	--	--	--	--	--	--	--	--	--
12043190 - SAIL RIVER NR NEAH BAY,WASH (LAT 48 21 27 LONG 124 33 38)										
NOV , 1977										
02...	2	3.5	.8	4.5	44	.6	.4	12	0	10
03...	--	--	--	--	--	--	--	--	--	--

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)
12043176 - WAATCH RIVER AT NEAH BAY,WASH (LAT 48 21 23 LONG 124 37 57)									
NOV , 1977									
02 ..	17	6.0	5.2	.54	.12	.14	.26	.80	3.5
03...	--	--	--	--	--	--	--	--	--
12043186 - VILLAGE CR AT NEAH BAY,WASH (LAT 48 22 11 LONG 124 37 38)									
NOV , 1977									
02...	2.4	5.7	5.2	.22	.03	.07	.10	.32	1.4
03...	--	--	--	--	--	--	--	--	--
12043190 - SAIL RIVER NR NEAH BAY,WASH (LAT 48 21 27 LONG 124 33 38)									
NOV , 1977									
02...	.6	4.7	3.5	.63	.05	.15	.20	.83	3.7
03...	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12072675 - CRESCENT LAKE NEAR GIG HARBOR, WASH (LAT 47 23 18 LONG 122 34 19)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)
AUG , 1978							
09...	1045	6.0	54	23.6	8.2	.00	.00
09...	1100	25	67	11.1	.4	.00	.01

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
AUG , 1978						
09...	.12	.39	.51	.03	.00	.00
09...	.34	.41	.75	.09	.01	.03

12072681 - CRESCENT CREEK NEAR GIG HARBOR, WASH (LAT 47 21 02 LONG 122 34 44)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NITRATE TOTAL (MG/L AS N)
APR , 1978											
17...	0850	8.7	75	7.8	8.4	11.1	4800	4800	59	.08	.41
JUL											
13...	0901	2.7	91	7.3	12.2	10.0	1750	290	69	.09	.23
OCT											
16...	0805	2.6	92	7.0	11.6	9.7	2400	570	52	.07	.14
JAN , 1979											
18...	0845	4.5	77	--	3.0	12.6	340	90	72	.10	.45

DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR , 1978										
17...	.01	.42	.05	.35	.40	.82	3.6	.04	.02	.06
JUL										
13...	.00	.23	.03	.20	.23	.46	2.0	.04	.04	.12
OCT										
16...	.01	.15	.01	.52	.53	.68	3.0	.04	.01	.03
JAN , 1979										
18...	.00	.45	.02	.25	.27	.72	3.2	.05	.01	.03

12072685 - NORTH CREEK AT GIG HARBOR, WASH (LAT 47 20 14 LONG 122 35 37)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NITRATE TOTAL (MG/L AS N)
APR , 1978											
17...	0945	2.1	95	7.9	7.8	11.4	K670	K85	58	.09	.28
JUL											
13...	0937	1.1	117	7.3	11.4	7.3	1260	64	81	.11	.17
OCT											
16...	0847	1.0	101	7.2	10.8	10.1	540	100	89	.12	.12
JAN , 1979											
18...	0940	1.1	102	--	4.0	12.2	32	15	84	.11	.28

DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR , 1978										
17...	.01	.29	.02	.30	.32	.61	2.7	.06	.04	.12
JUL										
13...	.00	.17	.04	.20	.24	.41	1.8	.08	.06	.18
OCT										
16...	.01	.13	.01	.35	.36	.49	2.2	.07	.04	.12
JAN , 1979										
18...	.00	.28	.08	.19	.27	.55	2.4	.08	.02	.06

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12072710 - ARTONDALE CREEK AT ARTONDALE, WASH (LAT 47 17 55 LONG 122 37 04)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)
APR , 1978											
17...	1400	4.0	89	7.6	8.6	11.0	1800	180	68	.09	.23
JUL											
13...	1522	1.1	160	7.5	14.0	9.3	15000	339	91	.12	.23
OCT											
16...	1100	1.3	178	7.3	11.5	9.5	4400	40	129	.18	.14
JAN , 1979											
18...	1240	2.2	188	--	2.7	12.3	72	59	142	.19	.38

DATE	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
APR , 1978										
17...	.01	.24	.05	.41	.46	.70	3.1	.04	.02	.06
JUL										
13...	.01	.24	.10	.18	.28	.52	2.3	.05	.05	.15
OCT										
16...	.01	.15	.01	.42	.43	.58	2.6	.03	.01	.03
JAN , 1979										
18...	.02	.40	.02	.43	.45	.85	3.8	.04	.01	.03

12072750 - UNNAMED CARR INLET TRIBUTARY AT ROSEDALE, WASH (LAT 47 19 49 LONG 122 38 54)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)
APR , 1978											
17...	1305	1.6	110	8.0	9.5	10.4	900	430	73	.10	.16
JUL											
13...	1501	1.0	128	7.4	13.2	9.3	493	23	79	.11	.15
OCT											
16...	1030	1.0	122	7.2	11.4	9.6	440	28	94	.13	.12
JAN , 1979											
18...	1205	1.4	113	--	5.4	11.5	33	9	88	.12	.25

DATE	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
APR , 1978										
17...	.01	.17	.03	.29	.32	.49	2.2	.05	.03	.09
JUL										
13...	.00	.15	.02	.16	.18	.33	1.5	.06	.06	.18
OCT										
16...	.01	.13	.01	.37	.38	.51	2.3	.05	.02	.06
JAN , 1979										
18...	.00	.25	.00	.02	.02	.27	1.2	.06	.02	.06

12072770 - MCCORMICK CREEK AT PURDY, WASH (LAT 47 22 16 LONG 122 37 21)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)
APR , 1978											
17...	1225	3.4	85	7.7	8.2	11.1	2200	960	56	.08	.25
JUL											
13...	1436	1.3	108	7.3	11.8	9.7	510	62	78	.11	.07
OCT											
16...	0948	1.2	109	7.0	11.3	9.6	K450	11	82	.11	.12
JAN , 1979											
18...	1125	1.6	93	--	3.6	12.4	510	300	80	.11	.31

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12072770 - MCCORMICK CREEK AT PURDY, WASH--Continued

DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR . 1978 17...	.01	.26	.04	.23	.27	.53	2.3	.02	.01	.03
JUL 13...	.00	.07	.06	.19	.25	.32	1.4	.03	.03	.09
OCT 16...	.01	.13	.00	.34	.34	.47	2.1	.02	.01	.03
JAN . 1979 18...	.00	.31	.00	.01	.01	.32	1.4	.03	.01	.03

12072800 PURDY CREEK AT PURDY, WASH (LAT 47 23 18 LONG 122 37 30)

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NITRATE TOTAL (MG/L AS N)
APR . 1978 17...	1115	7.3	76	7.8	8.2	11.0	K1900	63	52	.07	.30
JUL 13...	1010	2.2	99	7.4	12.0	10.2	1100	98	83	.11	.18
OCT 16...	1310	2.3	103	7.2	11.6	10.0	K91	37	85	.12	.14
JAN . 1979 18...	1010	3.5	83	--	3.0	12.8	340	120	75	.10	.44

DATE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
APR . 1978 17...	.01	.31	.05	.31	.36	.67	3.0	.02	.02	.06
JUL 13...	.01	.19	.07	.13	.20	.39	1.7	.04	.04	.12
OCT 16...	.01	.15	.01	.38	.39	.54	2.4	.02	.01	.03
JAN . 1979 18...	.00	.44	.00	.56	.56	1.0	4.4	.03	.01	.03

DATE	TIME	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L)
12107950 - NORTH FORK NEWAUKUM CREEK NEAR ENUMCLAW,WASH (LAT 47 14 06 LONG 121 55 42)									
DEC . 1977 11...	1245	0	0	5	1	.1	6	20	0
12108050 - CLOVERCREST OUTFALL AT ENUMCLAW,WASH (LAT 47 12 38 LONG 122 00 14)									
DEC . 1977 11...	1335	0	0	6	19	.0	10	40	0
12108450 - NEWAUKUM CREEK TRIBUTARY NEAR BLACK DIAMOND,WASH (LAT 47 15 12 LONG 122 01 34)									
DEC . 1977 11...	1315	2	0	13	4	.1	8	40	0
12108500 - NEWAUKUM CREEK NEAR BLACK DIAMOND, WASH. (LAT 47 16 33 LONG 122 03 30)									
DEC . 1977 11...	1145	0	10	5	2	.0	4	20	0

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
12129300 - FOEHN LAKE NEAR SKYKOMISH, WASH (LAT 47 34 02 LONG 121 15 26)							
AUG . 1978							
24...	1100	1.0	3	--	6.0	--	.02
12129310 - OPAL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 38 LONG 121 15 08)							
AUG . 1978							
22...	1530	1.0	9	--	6.5	9.3	.02
22...	1535	8.0	9	--	6.3	9.3	.02
12129320 - EMERALD LAKE NEAR SKYKOMISH, WASH (LAT 47 34 53 LONG 121 15 16)							
AUG . 1978							
22...	1430	1.0	12	--	8.6	9.4	.01
22...	1435	8.0	11	--	7.9	9.5	.01

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12129300 - FOEHN LAKE NEAR SKYKOMISH, WASH (LAT 47 34 02 LONG 121 15 26)						
AUG . 1978						
24...	.01	.08	.09	.11	.50	.00
12129310 - OPAL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 38 LONG 121 15 08)						
AUG . 1978						
22...	.00	.06	.06	.08	.40	.03
22...	.01	.07	.08	.10	.40	.01
12129320 - EMERALD LAKE NEAR SKYKOMISH, WASH (LAT 47 34 53 LONG 121 15 16)						
AUG . 1978						
22...	.01	.04	.05	.06	.30	.00
22...	.01	.05	.06	.07	.30	.02

12129330 - JADE LAKE NEAR SKYKOMISH, WASH (LAT 47 35 10 LONG 121 15 25)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
AUG . 1978										
22...	1200	3.0	10	9.2	9.1	--	--	--	--	--
22...	1205	33	17	6.3	.3	8	1	2.5	.4	.5

DATE	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
AUG . 1978									
22...	--	--	--	--	--	--	--	--	--
22...	12	.1	.2	7	.8	.5	.0	3.5	10

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG . 1978									
22...	--	--	.01	.01	.09	.10	.11	.50	.00
22...	13	.01	.02	.02	.11	.13	.15	.70	.02

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, AUGUST 1978 TO OCTOBER 1978

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
12129350 - TAHL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 31 LONG 121 15 44)							
AUG , 1978							
24...	1130	1.0	1	--	6.0	--	.01
12129360 - AL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 58 LONG 121 15 39)							
AUG , 1978							
24...	1800	1.0	10	--	7.4	--	.00
12129370 - LOCKET LAKE NEAR SKYKOMISH, WASH (LAT 47 35 18 LONG 121 16 14)							
AUG , 1978							
24...	1730	3.0	18	--	10.5	8.8	.02
24...	1735	115	18	--	5.5	7.8	.02

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12129350 - TAHL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 31 LONG 121 15 44)						
AUG , 1978						
24...	.01	.05	.06	.07	.30	.00
12129360 - AL LAKE NEAR SKYKOMISH, WASH (LAT 47 34 58 LONG 121 15 39)						
AUG , 1978						
24...	.01	.02	.03	.03	.10	.00
12129370 - LOCKET LAKE NEAR SKYKOMISH, WASH (LAT 47 35 18 LONG 121 16 14)						
AUG , 1978						
24...	.01	.03	.04	.06	.30	.00
24...	.01	.03	.04	.06	.30	.00

12129390 - LAKE ILSWOOT NEAR SKYKOMISH, WASH (LAT 473522 LONG 121 15 04)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
AUG , 1978										
25...	1200	3.0	12	9.2	9.4	--	--	--	--	--
25...	1205	98	18	5.0	10.4	5	1	1.5	.2	1.2

DATE	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
AUG , 1978									
25...	--	--	--	--	--	--	--	--	--
25...	36	.2	.1	4	1.5	.6	.0	2.5	13

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978									
25...	--	--	.02	.01	.09	.10	.12	.50	.00
25...	10	.02	.04	.01	.03	.04	.08	.40	.00

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12129600 - SOUTH TANK LAKE NEAR SKYKOMISH, WASH (LAT 47 33 40 LONG 121 15 46)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
AUG , 1978										
23...	1200	3.0	3	8.2	9.5	--	--	--	--	--
23...	1205	13	3	7.9	9.2	3	1	.9	.1	2.1

DATE	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
AUG , 1978									
23...	--	--	--	--	--	--	--	--	--
23...	63	.6	.0	2	.0	.6	.0	.7	3

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978									
23...	--	--	.01	.02	.07	.09	.10	.40	.00
23...	6	.00	.01	.02	.08	.10	.11	.50	.01

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
12129610 - NORTH TANK LAKE NEAR SKYKOMISH, WASH (LAT 47 34 01 LONG 121 15 50)							
AUG , 1978							
23...	1000	3.0	4	--	6.9	9.0	.00
23...	1005	13	3	--	6.8	8.9	.01
12129620 - BONNIE LAKE NEAR SKYKOMISH, WASH (LAT 47 33 54 LONG 121 16 22)							
AUG , 1978							
23...	1630	3.0	14	--	9.0	--	.02
23...	1635	33	18	--	10.4	--	.02

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12129610 - NORTH TANK LAKE NEAR SKYKOMISH, WASH (LAT 47 34 01 LONG 121 15 50)						
AUG , 1978						
23...	.02	.07	.09	.09	.40	.00
23...	.02	.07	.09	.10	.40	.01
12129620 - BONNIE LAKE NEAR SKYKOMISH, WASH (LAT 47 33 54 LONG 121 16 22)						
AUG , 1978						
23...	.01	.05	.06	.08	.40	.01
23...	.01	.07	.08	.10	.40	.00

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12129710 - ANGELINE LAKE NEAR SKYKOMISH, WASH (LAT 47 34 45 LONG 121 18 26)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
AUG , 1978									
02...	1700	3.0	8	6.6	15.0	9.7	--	--	--
02...	1705	164	5	6.6	3.8	11.7	3	1	.9

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
AUG , 1978									
02...	--	--	--	--	--	--	--	--	--
02...	.1	2.0	61	.5	.1	2	.5	1.0	.0

DATE	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978								
02...	--	--	--	--	.01	.03	.04	.00
02...	1.4	4	7	.01	.01	.00	.01	.00

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
12129730 - BIG HEART LAKE NEAR SKYKOMISH, WASH (LAT 47 35 02 LONG 121 19 05)							
AUG , 1978							
03...	0900	3.0	43	6.6	15.0	7.9	.02
03...	0905	164	30	6.7	4.0	9.4	.03
12129750 - DELTA LAKE NEAR SKYKOMISH, WASH (LAT 47 35 45 LONG 121 18 46)							
AUG , 1978							
30...	1500	3.0	11	--	14.2	9.9	--
30...	1505	98	18	--	5.2	8.5	--

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12129730 - BIG HEART LAKE NEAR SKYKOMISH, WASH (LAT 47 35 02 LONG 121 19 05)						
AUG , 1978						
03...	.01	.02	.03	.05	.20	.00
03...	.02	.00	.02	.05	.20	.01
12129750 - DELTA LAKE NEAR SKYKOMISH, WASH (LAT 47 35 45 LONG 121 18 46)						
AUG , 1978						
30...	.04	.02	.06	--	--	.00
30...	.02	.06	.08	--	--	.00

WATER SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
12129800 - LITTLE HEART LAKE NEAR SKYKOMISH, WASH (LAT 47 35 35 LONG 121 19 42)							
AUG , 1978							
03...	1700	3.0	10	6.8	15.4	9.4	.02
03...	1705	66	23	6.5	6.0	8.2	.03
12129810 - COPPER LAKE NEAR SKYKOMISH, WASH (LAT 47 36 28 LONG 121 19 41)							
AUG , 1978							
04...	1000	3.0	55	6.6	17.0	8.1	--
04...	1005	148	12	6.6	4.0	2.2	--
12129820 - MCCAFFREY LAKE NEAR SKYKOMISH, WASH (LAT 47 36 34 LONG 121 19 52)							
AUG , 1978							
04...	1200	1.0	--	--	23.5	7.4	.01

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
12129800 - LITTLE HEART LAKE NEAR SKYKOMISH, WASH (LAT 47 35 35 LONG 121 19 42)						
AUG , 1978						
03...	.00	.02	.02	.04	.20	.00
03...	.01	.05	.06	.09	.40	.00
12129810 - COPPER LAKE NEAR SKYKOMISH, WASH (LAT 47 36 28 LONG 121 19 41)						
AUG , 1978						
04...	.01	.01	.02	--	--	.00
04...	.00	.01	.01	--	--	.00
12129820 - MCCAFFREY LAKE NEAR SKYKOMISH, WASH (LAT 47 36 34 LONG 121 19 52)						
AUG , 1978						
04...	.02	.08	.10	.11	.50	.01

12129840 - LAKE MALACHITE NEAR SKYKOMISH, WASH (LAT 47 36 37 LONG 121 20 05)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
AUG , 1978									
04...	1600	3.0	15	6.6	18.2	8.0	--	--	--
04...	1605	164	42	6.7	4.4	4.8	16	0	5.8

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
AUG , 1978									
04...	--	--	--	--	--	--	--	--	--
04...	.4	2.0	21	.2	.5	17	1.0	.5	.0

DATE	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978								
04...	--	--	--	--	.01	.00	.01	.01
04...	7.1	30	28	.04	.00	.03	.03	.02

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12129850 - TROUT LAKE NEAR SKYKOMISH, WASH (LAT 47 37 10 LONG 121 18 44)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
AUG . 1978										
29...	1130	3.0	12	14.6	8.6	--	--	--	--	--
29...	1135	30	11	12.3	8.3	5	1	1.2	.4	.7

DATE	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
AUG . 1978									
29...	--	--	--	--	--	--	--	--	--
29...	24	.1	.2	4	1.4	.5	.0	2.1	13

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG . 1978									
29...	--	--	.01	.04	.01	.05	.06	.30	.01
29...	9	.02	.01	.04	.09	.13	.14	.60	.02

12129870 - ROCK LAKE NEAR SKYKOMISH, WASH (LAT 47 38 32 LONG 121 19 56)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
AUG . 1978								
28...	1400	3.0	8	12.0	8.6	--	--	--
28...	1405	148	11	4.2	5.4	7	2	2.2

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
AUG . 1978									
28...	--	--	--	--	--	--	--	--	--
28...	.4	.4	11	.1	.0	5	1.7	.4	.0

DATE	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG . 1978								
28...	--	--	--	--	.01	.07	.08	.00
28...	2.1	9	10	.01	.01	.05	.06	.01

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

12129890 - TOP LAKE NR SKYKOMISH, WASH (LAT 47 39 25 LONG 121 20 14)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
AUG , 1978							
28...	1800	3.0	35	--	13.3	8.3	--
28...	1805	30	44	--	10.7	8.5	--

12129895 - TOP LAKE POTHOLE NEAR SKYKOMISH, WASH (LAT 47 39 23 LONG 121 20 02)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
AUG , 1978							
28...	1900	3.0	38	--	13.2	8.8	--
28...	1905	10	40	--	11.5	8.7	--

12129900 - EVANS LAKE NEAR SKYKOMISH, WASH (LAT 47 39 26 LONG 121 19 28)

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
AUG , 1978							
29...	1100	3.0	50	--	16.0	9.1	.00
29...	1105	15	55	--	14.5	9.1	.00

12129890 - TOP LAKE NR SKYKOMISH, WASH (LAT 47 39 25 LONG 121 20 14)

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978						
28...	.01	.14	.15	--	--	.00
28...	.01	.05	.06	--	--	.00

12129895 - TOP LAKE POTHOLE NEAR SKYKOMISH, WASH (LAT 47 39 23 LONG 121 20 02)

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978						
28...	.02	.18	.20	--	--	.00
28...	.01	.11	.12	--	--	.01

12129900 - EVANS LAKE NEAR SKYKOMISH, WASH (LAT 47 39 26 LONG 121 19 28)

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
AUG , 1978						
29...	.01	.05	.06	.06	.30	.00
29...	.02	.19	.21	.21	.90	.01

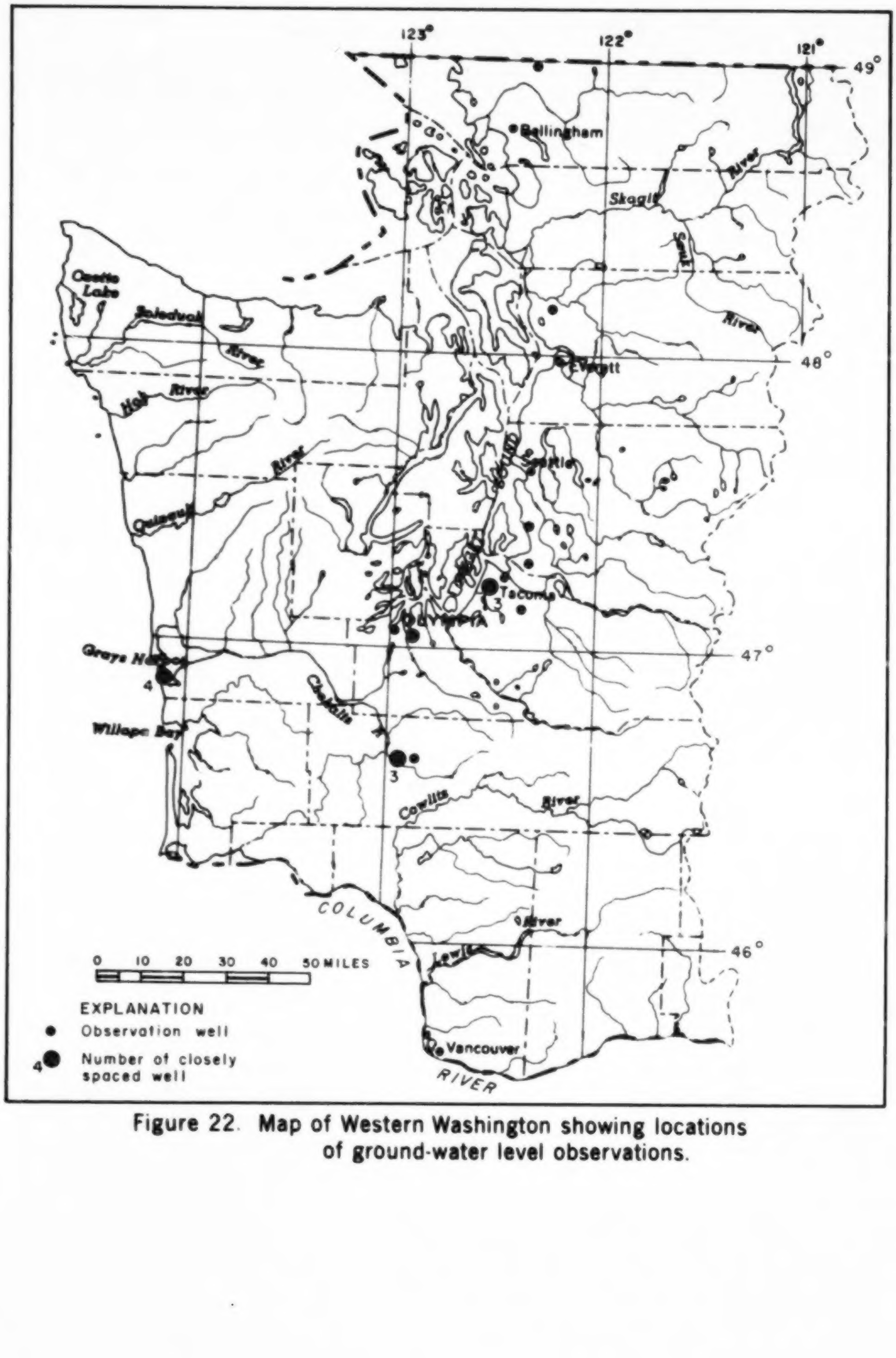
123°
122°
121°
49°
48°
47°
46°
Bellingham
Skagit
River
Sauk
River
Ozette Lake
Soleduck
River
Hoh River
River
Quinault
Everett
Seattle
Sound
Puget
Tacoma
3
Olympia
Grays Harbor
4
Willapa Bay
Chehalis
3
Cowlitz
River
River
COLUMBIA
Lewis
Vancouver
RIVER
0 10 20 30 40 50 MILES
EXPLANATION
Observation well
4 Number of closely spaced well

Figure 22. Map of Western Washington showing locations of ground-water level observations.

GRAYS HARBOR COUNTY

465123124062201. Local number, 16/12W-24J4.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 187 to 192 ft (57.0 to 58.5 m), water level measured in 12 in (300 mm) diameter casing.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.19 ft (2.801 m) below land-surface datum, Mar. 14, 1972; lowest measured, 11.05 ft (3.368 m) below land-surface datum, Oct. 4, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 10, 1978	9.31	July 17, 1978	10.68				

465123124062202. Local number, 16/12W-24J5.
LOCATION.--46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 269 to 279 ft (82.0 to 85.0 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.30 ft (2.530 m) below land-surface datum, Jan. 10, 1978; lowest measured, 98.50 ft (30.023 m) below land-surface datum, June 23, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 10, 1978	8.30	July 17, 1978	10.26				

465123124062203. Local number, 16/12W-24J6.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 327 to 332 ft (99.7 to 101.2 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.66 ft (2.640 m) below land-surface datum, Jan. 10, 1978; lowest measured, 10.27 ft (3.130 m) below land-surface datum, Aug. 17, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 10, 1978	8.66	July 17, 1978	10.10				

465123124062204. Local number, 16/12W-24J7.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sandy clay of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 516 to 521 ft (157.3 to 158.8 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.66 ft (2.640 m) below land-surface datum, Oct. 24, 1973; lowest measured, 10.32 ft (3.146 m) below land-surface datum, Aug. 7, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 10, 1978	10.04	July 17, 1978	10.40				

KING COUNTY

471715122191501. Local number, 21/4-20Q1.
LOCATION.--Lat 47°17'15", long 122°19'15", Hydrologic Unit 17110019, near Federal Way.
Owner: Water District No. 124.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 8 in (200 mm), depth 150 ft (45.7 m).
DATUM.--Land-surface datum is 235 ft (71.6 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.07 ft (1.850 m) below land-surface datum, Feb. 8, 1967; lowest measured, 31.98 ft (9.748 m) below land-surface datum, July 17, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 4, 1977	31.75A	Mar. 1, 1978	18.25				

472457122185801. Local number, 22/4-8A1.
LOCATION.--Lat 47°24'57", long 122°18'58", Hydrologic Unit 17110019, near Des Moines.
Owern: Water District No. 75.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 12 in (300 mm), depth 395 ft (120.4 m).
DATUM.--Land-surface datum is 200 ft (61.0 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.03 ft (17.992 m) below land-surface datum, Apr. 23, 1968; lowest measured, 73.33 ft (22.351 m) below land-surface datum, Aug. 4, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 4, 1978	67.38	Aug. 4, 1978	73.33				

LEWIS COUNTY

463441122485201. Local number, 13/1W-28P1.
LOCATION.--Lat 46°34'41", long 122°48'52", Hydrologic Unit 17100103.
Owner: R. L. Wade.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic and irrigation artesian well, diameter 6 in (150 mm), depth 112 ft (34.1 m), cased to 112 ft (34.1 m).
DATUM.--Land-surface datum about 360 ft (110 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--Highest water level measured, 63.8 ft (19.45 m) above land-surface datum, Apr. 18, 1954; lowest measured, 15.6 ft (4.75 m) above land-surface datum, Feb. 7, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1977	+18.60	Apr. 11, 1978	+18.60				

463527122502001. Local number, 13/1W-29D1.
LOCATION.--Lat 46°35'27", long 122°50'20", Hydrologic Unit 17100103.
Owner: J. C. Marshall.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 230 ft (70.1 m), cased to 212 ft (64.6 m).
DATUM.--Land-surface datum about 305 ft (93.0 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 98.0 ft (29.9 m) above land-surface datum, June 21, 1968; lowest measured, 83.0 ft (25.3 m) below land-surface datum, Mar. 13, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1977	+4.68	Apr. 11, 1978	+4.75				

463532122393202. Local number, 13/1-22R2.
LOCATION.--Lat 46°35'32", long 122°39'32", Hydrologic Unit 17100103.
Owner: Chas. E. Greene.
AQUIFER.--Glacial clay and sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 150 ft (45.7 m), cased to 113 ft (34.4 m).
DATUM.--Land-surface datum about 600 ft (183 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--March 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.1 ft (8.56 m) above land-surface datum, Jan. 5, Feb. 7, May 12, June 23, 1967; lowest measured, 3.5 ft (1.07 m) above land-surface datum, Nov. 20, 1972, Oct. 16, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1977	+9.50	Apr. 11, 1978	+9.50				

+ Water levels above land surface.
A Well being pumped.

LEWIS COUNTY--Continued

463558122502201. Local number, 13/1W-20E1.
LOCATION.--Lat 46°35'58", long 122°50'22", Hydrologic Unit 17100103.
Owner: A. B. Isberg.
AQUIFER.--Marine sandstone of Eocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 1,645 ft (501.4 m) cased to 204 ft (62.2 m).
DATUM.--Land-surface datum about 320 ft (97.5 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 76.0 ft (23.16 m) above land-surface datum, Aug. 12, 1968; lowest measured, 2.00 ft (0.610 m) above land-surface datum, Apr. 20, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1977	+2.60	Apr. 11, 1978	+2.50				

PIERCE COUNTY

470933122182001. Local number, 19/4-4L1.
LOCATION.--Lat 47°09'33", long 122°18'20", Hydrologic Unit 17110014.
Owner: Fruitland Mutual Water Company.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (150 mm), depth 240 ft (73.2 m), cased to 240 ft (73.2 m), perforated 200 to 235 ft (61.0 to 71.6 m).
DATUM.--Land-surface datum about 355 ft (108.2 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--June 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 207.80 ft (63.337 m) below land-surface datum, Aug. 10, 1972; lowest, dry, below land-surface datum, Jan. 4, Mar. 1, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 3, 1977	237.54A	Mar. 1, 1978	Dry	July 5, 1978	234.39	Sept. 6,1978	231.26
Jan. 4, 1978	Dry	May 1	238.67A				

471308122305501. Local number, 20/2-14L1.
LOCATION.--Lat 47°13'08", long 122°30'55", Hydrologic Unit 17110019.
Owner: Town of Fircrest, well No. 8.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 20 in (500 m), depth 141 ft (43.0 m), cased to 112 ft (34.1 m).
DATUM.--Land-surface datum about 295 ft (89.9 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.21 ft (24.143 m) below land-surface datum, Apr. 24, 1972; lowest measured, 92.05 ft (28.057 m) below land-surface datum, Sept. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 3, 1977	84.56	Mar. 1, 1978	94.10	July 7, 1978	85.05	Sept. 6, 1978	89.58
Jan. 4, 1978	87.34B	May 8	86.40B				

471338122282201. Local number, 20/3-18C1.
LOCATION.--Lat 47°13'38", long 122°28'22", Hydrologic Unit 17110019.
Owner: City of Tacoma.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused-test artesian well, diameter 12 in (300 mm), depth 185 ft (56.4 m), cased to 152 ft (46.3 m).
DATUM.--Land-surface datum about 310 ft (94.5 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--March 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.85 ft (19.461 m) below land-surface datum, Oct. 5, 1954; lowest measured, 127.38 ft (38.825 m) below land-surface datum, Mar. 27, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 11, 1977	121.08	Mar. 1, 1978	108.04	July 5, 1978	108.20	Sept. 6, 1978	106.53
Jan. 4, 1978	110.33	May 1	106.48	Aug. 24	106.77		

+ Water levels above land surface.
A Well being pumped.
B Well recently pumped.

PIERCE COUNTY--Continued

471358122302207. Local number, 20/2-11J7.
LOCATION.--Lat 47°13'58", long 122°30'22", Hydrologic Unit 17110019.
Owner: Fircrest Well No. 3.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (300 mm), depth 152 ft (46.3 m), perforated 88 to 94 ft (26.8 to 28.7 m) and 141 to 149 ft (34.0 to 45.4 m).
DATUM.--Land-surface datum about 285 ft (86.9 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--August 1963 to February 1964, December 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.31 ft (18.382 m) below land-surface datum, Feb. 14, 1964; lowest measured, 68.21 ft (20.790 m) below land-surface datum, Oct. 1, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 3, 1977	65.81	Mar. 1, 1978	65.24	July 5, 1978	64.70	Sept. 6, 1978	64.52
Jan. 4, 1978	66.23	May 1	64.11				

SNOHOMISH COUNTY

481115122082001. Local number, 31/5-10J3.
LOCATION.--Lat 48°11'15", long 122°08'20", Hydrologic Unit 17110008, near Arlington.
Owner: Robert Wollin.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in (150 mm), depth 120 ft (36.6 m), cased to 117 ft (35.7 m).
DATUM.--Land-surface datum about 85 ft (25.9 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--September 1945 to October 1961, May 1968 to current year.
EXTREMES FOR PERIOD OF RECORD--Highest water level measured, 21.37 ft (6.514 m) below land-surface datum, Sept. 17, 1948; lowest measured, 32.37 ft (9.866 m) below land-surface datum, Sept. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Dec. 8, 1977	30.06	Jan. 23, 1978	29.69	Mar. 23, 1978	31.23	May 23, 1978	30.32

THURSTON COUNTY

470318122581601. Local number, 18/2W-7R1.
LOCATION.--Lat 47°03'18", long 122°58'16", Hydrologic Unit 17110019, near Olympia.
Owner: Al Racine.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 125 ft (38.1 m), cased to 120 ft (36.6 m).
DATUM.--Land-surface datum about 170 ft (51.8 m) National Geodetic Vertical Datum of 1929.
PERIOD OF RECORD.--July 1958, November 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 68.98 ft (21.025 m) below land-surface datum, June 7, 1972; lowest measured, 87.26 ft (26.597 m) below land-surface datum, Jan. 16, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 16, 1978	87.26	Mar. 28, 1978	86.70	June 7, 1978	78.48	July 31, 1978	78.96

WHATCOM COUNTY

485934122193801. Local number, 40/4-5D1.
LOCATION.--48°59'34", long 122°19'38", Hydrologic Unit 17110001, Van Buren and Hoverstick Roads, Sumas.
Owner: Paul Roorda.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Dug domestic and stock water-table well, 20 by 30 in (500 by 750 mm), depth 61 ft (18.6 m), lined with concrete to 61 ft (18.6 m).
DATUM.--Land-surface datum about 180 ft (55 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Water levels used in monthly Water Resources Review.
PERIOD OF RECORD.--October 1940 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.98 ft (14.624 m) below land-surface datum, Mar. 20, 1972; lowest dry, water level not measureable, Jan. 10, 1944, Oct. 4, 1944, Jan. 1, 1953, Sept. 30, 1958, Nov. 27, 1973, Sept. 27, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 24, 1977	57.68	Jan. 26, 1978	54.88	Apr. 23, 1978	54.38	July 24, 1978	56.08
Nov. 25	57.88	Feb. 24	54.78	May 24	54.48	Aug. 21	56.65
Dec. 28	55.73	Mar. 31	54.38	June 20	55.08	Sept 21	57.18

CLALLAM COUNTY

LOCAL IDENT-I-FIER	STATION NUMBER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)
33/15W-15G01	482142124372501	48 21 42	124 37 25	01	77-11-03	0650	15	10.0	3
33/15W-15G02	482141124372701	48 21 41	124 37 27	01	77-11-03	0710	10	10.0	2
33/15W-15G03	482139124372501	48 21 39	124 37 25	01	77-11-03	0730	7.8	10.0	20
33/15W-15G04	482141124372301	48 21 41	124 37 23	01	77-11-03	0745	9.1	10.0	15

DATE OF SAMPLE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)
77-11-03	<3	.01	.79	.51	1.3	1.3	5.8
77-11-03	<3	.01	.02	.08	.10	.11	.50
77-11-03	K36	.01	.25	.37	.62	.63	2.8
77-11-03	<3	.01	.27	.23	.50	.51	2.3

JEFFERSON COUNTY

LOCAL IDENT-I-FIER	STATION NUMBER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
26/13W-20M01	474437124245301	47 44 37	124 24 53	01	78-06-01	1045	6.0	70	6.0

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
26/13W-20M01	78-06-01	8.0	1	3	<1	21	2	4.9	2.2	8.8

LOCAL IDENT-I-FIER	DATE OF SAMPLE	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
26/13W-20M01	78-06-01	47	.8	.4	24	0	20	38	3.7	13

LOCAL IDENT-I-FIER	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)
26/13W-20M01	78-06-01	.1	16	59	61	.08	.26	430	10

PACIFIC COUNTY

LOCAL IDENT-I-FIER	STATION NUMBER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	FLOW RATE, INSTAN-TANEOUS (GPM)
14/11W-03G01	464332124011801	46 43 32	124 01 18	01	78-04-14	1130	208	20	1.0
					78-05-24	1045	208	--	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
14/11W-03G01	78-04-14	163	--	9.8	--	--	--	--	--	--
	78-05-24	170	7.8	9.8	4	53	0	12	5.5	13

LOCAL IDENT-I-FIER	DATE OF SAMPLE	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
14/11W-03G01	78-04-14	--	--	--	--	--	--	--	--	--
	78-05-24	34	.8	1.0	65	0	53	1.6	2.6	14

LOCAL IDENT-I-FIER	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	IRON TOTA_ RECOV-ERABLE (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)
14/11W-03G01	78-04-14	--	--	--	--	--	.07	--	--
	78-05-24	.1	31	111	111	.15	.08	760	10

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☆GPO 1979--#698-924

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons